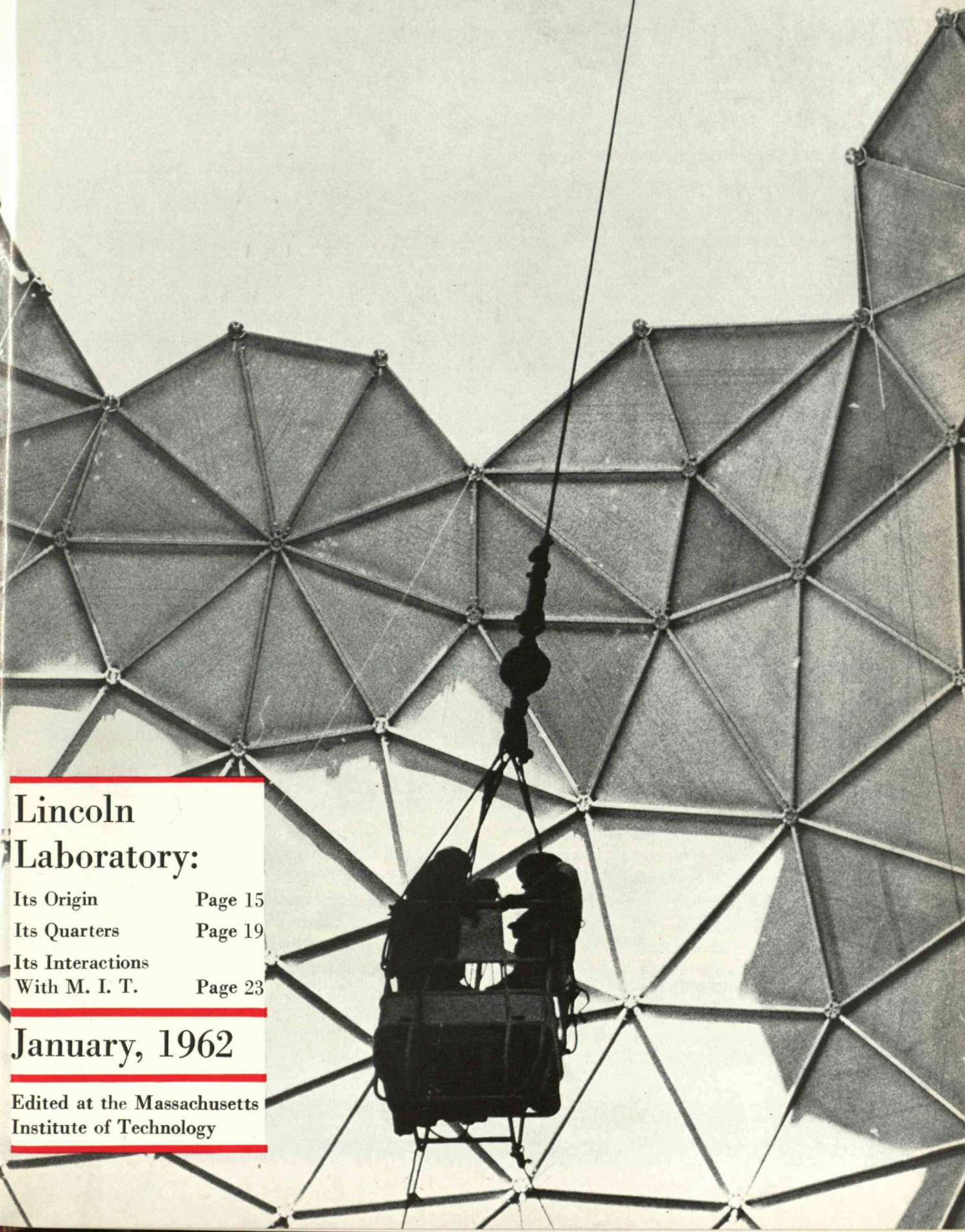
Technology Review



Lincoln Laboratory:

Its Origin Page 15

Its Quarters Page 19

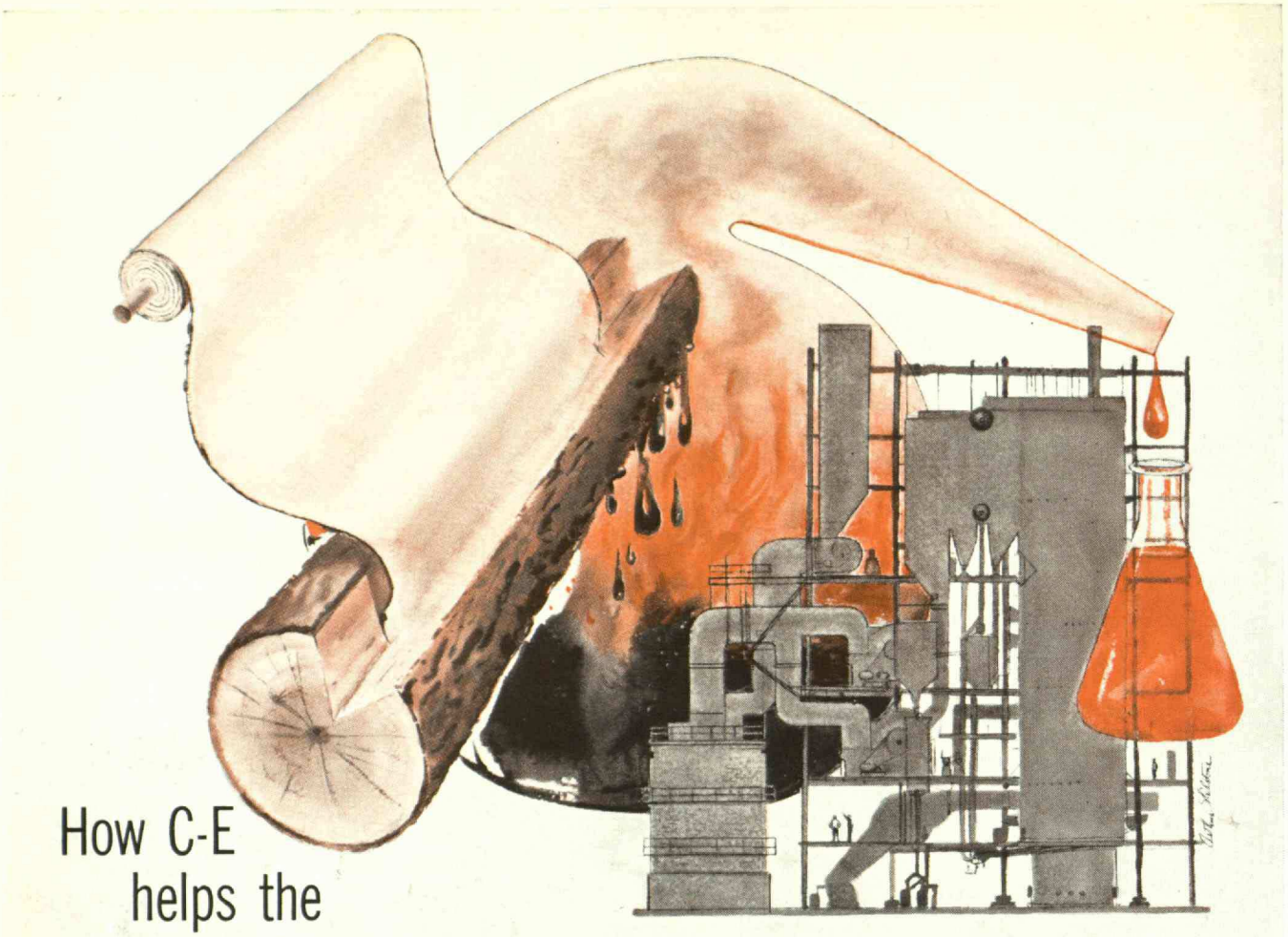
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January, 1962

Edited at the Massachusetts Institute of Technology

technology
review
Published by MIT

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How C-E helps the pulp and paper industry save more than 50 million pounds of chemicals a day

Most of the world's paper is made from the cellulose contained in wood. An involved series of cooking processes and chemical baths is necessary to separate the usable cellulose from the other wood ingredients. Vast quantities of chemicals are required and, because of this, the economic well-being of the pulping industry literally depends on the efficient reclamation and re-use of these chemicals.

The C-E Chemical Recovery Unit – at home in pulping plants the world over–not only solves the recovery problem, but at the same time, produces much of the steam needed to cook and process the pulp which the chemicals helped make.

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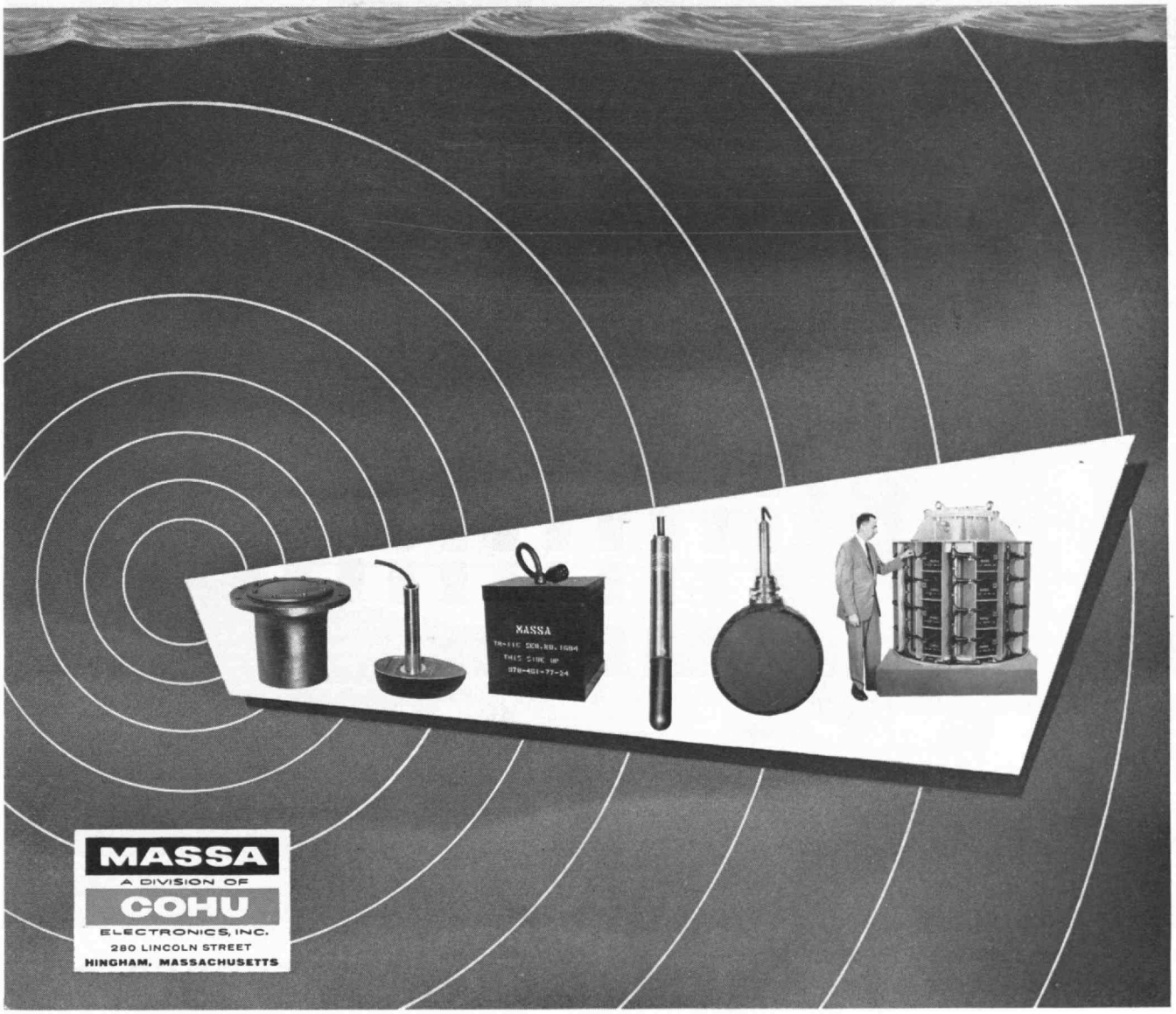
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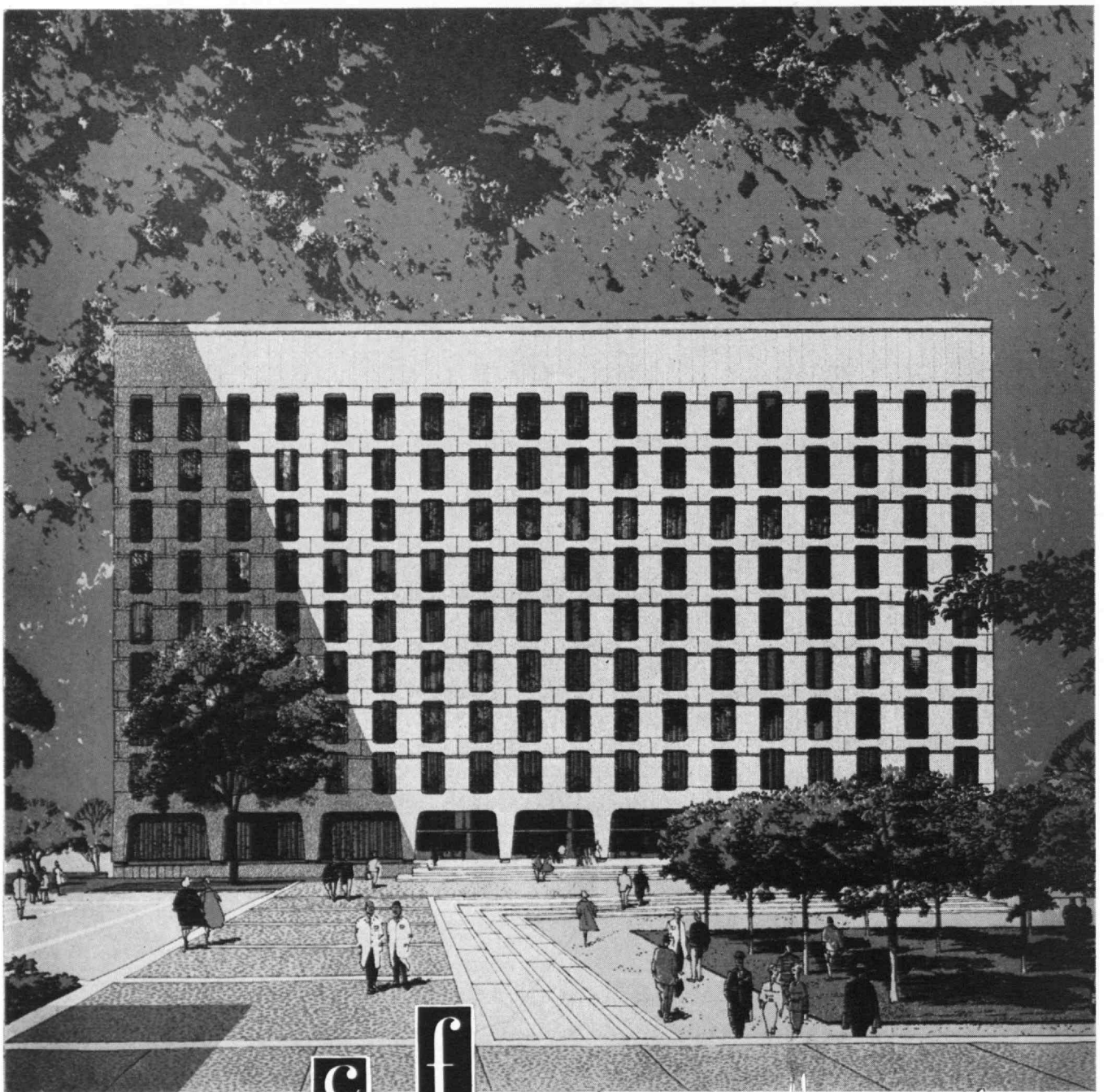


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Technology Review

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Volume 64, Number 3 *Edited at the Massachusetts Institute of Technology* *January, 1962*

Feedback

A Peril of Speed

FROM DUDLEY CLAPP, '10:

Popular writers often say "10 times faster" when they mean "10 times as fast" although they probably would know enough not to say a machine was running a tenth faster when they meant it was running a tenth as fast.

It is too bad the author of "This Year's Fastest Computer" [Nov. Review, p. 30] fell into this error.

5 Channing Street
Cambridge 38, Mass.

The Care and Feeding of Talent

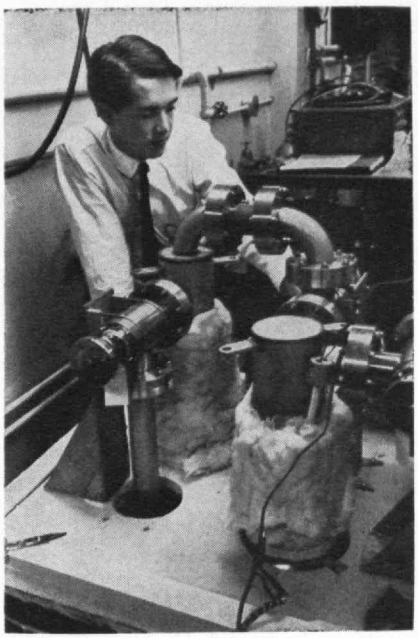
FROM LLOYD M. LICHER, '50:

A hearty second to Joe Kaming's "The Most Wanted Class?" in your Feedback for November. His comments were a good statement of my opinions on the subjects of "Engineer Shortages" and "Misuse of Engineering Talent."

It would appear that some of the explanation for disenchantment on the part of graduates after they get into industry is that the school makes little or no attempt to let the undergraduate know what to expect. Perhaps the Faculty is too remote from industry to know. I do not remember being told any of the "facts of life" before graduating as an aeronautical engineer in 1950. Fortunately, my first job was with a small, local concern there [Cambridge] that did make use of a variety of my talents and recent education.

The big shock came when a move was made to a large company on the West Coast that was in the commercial aircraft business; the "large" for security, the "commercial" because military was repugnant to me. I was assigned a drafting table in a huge room full of drafting tables and, after learning their "system" by doing a lot of minor drawing changes, was given a floor panel on their latest model to draw. It was a 30-foot long drawing, copying that for the previous model with a few minor changes.

(*Continued on page 6*)



LINCOLN LABORATORY, *where this photo of a young man using a cryogenic pumping system was taken, is now observing its 10th anniversary. Much of this issue is devoted to reports on its activities.*

EDITOR: Volta Torrey; BUSINESS MANAGER: R. T. Jope, '28; CIRCULATION MANAGER: D. P. Severance, '38; EDITORIAL ASSOCIATES: J. J. Rowlands, Francis E. Wylie, John I. Mattill; EDITORIAL STAFF: Ruth King, Roberta A. Clark; BUSINESS STAFF: Madeline R. McCormick, Patricia A. Fletcher; PUBLISHER: H. E. Lobdell, '17.

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George Woodbury photographed the men completing the Haystack radome while preparing the photo essay that begins on page 19. This radome is a 1,500,000-cubic-foot structure, built to withstand 130 mph winds. It contains 930 panels of 15 different sizes and its beams total 3½ miles in length. The H. I. Thompson Fiber Glass Company constructed it for the Air Force Systems Command.

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Individuals Noteworthy

New Posts

NAMED in the news recently were the Alumni whose elections, promotions, and appointments follow:

Norman L. Weiss, '23, as a Director, American Institute of Mining, Metallurgical, and Petroleum Engineers . . . *David A. Meeker, '24,* as a Director, Federal Reserve Bank of Cleveland . . . *W. Maxey Jarman, '25,* as a Director, Mutual Life Insurance Company of New York;

Arthur J. Connell, '27, as a Director, Stone and Webster Engineering Corporation . . . *Randal M. Robertson, '36,* as Associate Director (Research), the National Science Foundation . . . *Arthur M. York, '37,* as Director, Public Relations, United States Rubber Co.;

Richard M. Dunlap, '40, as Associate Director for Research, *Caesar A. Spero, '44,* as Head of the Development Department, and *John F. Brady, '48,* as Head of the Applied Science Department, U. S. Naval Underwater Ordnance Station, Newport, R.I.;

Karl L. Fetters, '40, as President, The Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers . . . *Peter Horton, '41,* as Director of Plans, Missile and Space Systems Division, Douglas Aircraft Company . . . *Herbert E. Hirschland, '41,* and *Harry W. Buchanan, '56,* respectively, as a Group Vice-president and as Executive Vice-president, Metal & Thermit Corporation;

A. Joseph Mestier, Jr., '43, as Manager of Sales, Industrial Systems Department, Allis-Chalmers manufacturing Company . . . *Robert F. Hoffman, '46,* as Manager of Manufacturing, Harrison Division, Worthington Corporation . . . *Seward J. Kennedy, '46,* as Counsel, Northern and Southeastern Europe Region, Mobil International Oil Company;

Lynwood O. Eikrem, '48, as Manager, Product Development, David W. Mann Company Division, Geophysics Corporation of America . . . *Ivar H. Stockel, '49,* as Associate Manager of Research, St. Regis Paper Company;

David R. Israel, '49, and *Charles A. Zraket, '53,* as Technical Directors, and *David R. Brown, '49,* and *Kenneth E. McVicar, '50,* as Associate Technical Directors, Mitre Corporation.

Alumni Committee Heads

THE M.I.T. Alumni Association's Executive Committee has established three new committees: One headed by *Edward O. Vetter, '42,* will plan an Alumni Officers' Conference next September 7 and 8; another, with *Thomas F. Creamer, '40,* as chairman, will consider plans for future Alumni Days; and a third, led by *Samuel A. Groves, '34,* will examine communications between the Institute and its Alumni.

The Gardner Lecturer

THE 1962 Lester D. Gardner Lecturer at M.I.T. will be C. Fayette Taylor, Professor of Automotive Engineering, Emeritus.

In previous lectures in memory of Lester D. Gardner, '98, important aspects of the history of flight have been discussed by Grover Loening, Igor I. Sikorsky, and James H. Doolittle, '24, and Professor Taylor will deal with propulsion.

Naval Science Head

CAPTAIN LEWIS E. LARSON, JR., '47, has become professor and head of the M.I.T. Department of Naval Science. Captain Larson was graduated from the Naval Academy in 1941, and saw both air and sea duty in World War II. He was assistant director of the Weapons Engineering Division of the Bureau of Naval Weapons before coming to M.I.T.

Hoover Medalist

MERVIN J. KELLY, a member of the M.I.T. Corporation and former chairman of the Board of Bell Telephone Laboratories, Inc., received the 1961 Hoover Medal for distinguished public service, at the dedication in November of the United Engineering Center on United Nations Plaza in New York.

W. MacCornack: 1879-1961

THE FORMER Dean of the School of Architecture, Professor Emeritus Walter R. MacCornack, '03, died on November 6 in Littleton, N. H.

As a practicing architect, Professor MacCornack was widely known, especially for his work on schools. He designed school and college buildings in Illinois, Ohio, Virginia, Kentucky, Massachusetts, and Connecticut. The Cleveland Board of Education engaged him in the 1920's to direct a $40 million school building program, and the Board of Education of New York City called on him in the 1930's for recommendations for improvements in planning, design, and construction methods in the city's school system.

Professor MacCornack became dean of the M.I.T. School of Architecture in 1939; he retired in 1944 and was emeritus professor and honorary lecturer until 1947. He was an honorary corresponding member of the Royal Institute of British Architects, and a fellow of the American Institute of Architects.

Mrs. MacCornack and a son, Donald A., '33, survive.

Faculty Activities

DEAN JOHN E. BURCHARD, '23, of the School of Humanities and Social Science, represented M.I.T. at the centennial convocation of Vassar College. . . . Professor *Huston Smith* served last fall on an advisory group reviewing the National Educational Television and Radio Center's programming in the humanities. . . . Professor *John B. Rawls* will become a professor of philosophy at Harvard next summer. . . . Professor *Raymond L. Bisplinghoff* has been appointed to the editorial board of *Aerospace Engineering* as a technical consultant.

Professor *Charles Stark Draper, '26,* delivered the Alexander Graham Bell Lecture at Boston University in November. . . . Dr. *James D. Ebert,* formerly of the Department of Biology, is now vice-president of the American Institute of Biological Sciences.

This Year's Sloan Fellows

THE 43 Sloan Fellows in Executive Development at the M.I.T. School of Industrial Management for 1961-1962 came from 17 states and 4 for-

(*Concluded on page 44*)

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Feedback

(Continued from page 3)

This was followed by a chance to join the missiles structures group, which I took because it promised to be more challenging. It was, but again, the demands on my talents were next to nothing since there was always someone above who made all the important decisions. I became convinced that any high school graduate could do the drafting that was being expected of me.

Admittedly, recent graduates need some seasoning and experience before they can be given much responsibility, but not years of drudgery. It would help the companies, the customers, and the U.S. taxpayer if the companies would make better use of the talent they now have on their payrolls and hire lesser talent to do the detail work that is required to put a complex product into production.

After a number of years of drudgery, I seized upon a chance to leave the engineering profession and work at my hobby, so to speak. A 20 per cent pay cut was involved and did not even make me hesitate because I knew I would thoroughly enjoy the new work. And I have. (I am executive secretary of The Soaring Society of America, Inc., and editor of their monthly *Soaring* magazine.) I doubt seriously if I would ever return to the engineering profession, certainly not as I knew it. For the quality and quantity of work they do, the vast majority of engineers are overpaid to a remarkable degree. I made myself unpopular by stating this to my fellow employees, especially at the times each year when their "unions" were making preposterous raise demands of the company.

There is one last point I would like to make and it concerns the school. I should think the school's object woud be to turn out engineers who had as full a feeling for their profession as could be obtained in their years at M.I.T. To supplement what the formal education gives, extracurricular activities in the fields of interest to each student are certainly in order. I'm thinking of ham radio pursuits by the E.E. students, the glider club and model airplane club for aero students, etc. I was intimately involved in the latter two but we were never encouraged by the school or Faculty to pursue these interests. Indeed, one professor referred to us as the "idiot fringe." The shameful thing to me was that most of our club members were not in aero and of those in my graduating class who were in aero, I'd say that 75 per cent had never flown and

(Concluded on page 8)

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Feedback

(Concluded from page 6)

had no particular desire to. What better feel for aircraft could one get than to build and fly models, learning from mistakes, learning how to fly one's self in gliders or airplanes, maintaining aircraft, and seeing how they're put together? Surely there are parallels in other courses. I hope the Institute learns what it is missing by not directing the students' extra energies into activities that will richly amplify their academic education.

12536 Woodbine Street
Los Angeles 66, Calif.

The Review's Covers

FROM PAUL M. HEILMAN, '44:

Just a note to congratulate you on the information contained in the article on page 51 of the November Review. It certainly is nice that The Review has been selected for its outstanding feature articles. . . . I would like to add my own congratulations on the cover artwork which you have been selecting. It is quite good, and invites one to go inside to find out what it is all about.

Also, I want to thank your staff for their help in putting together Class Notes. I get the various clippings and publicity releases regularly, and that helps keep the monthly column going.

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TECH NEWS

FOR SCIENTISTS, MATHEMATICIANS
OPERATIONS EVALUATION GROUP, M.I.T.

In its research and analysis for the Chief of Naval Operations and Fleet Commanders, the Operations Evaluation Group, M.I.T., pursues knowledge in virtually every sphere of naval interest.

Consider OEG study 644, for example, entitled "Echo Variability and the Formulation of a Radar Theory." OEG's analysts found that blaming radar operators and poor radar maintenance for variability of signal presentation on radar scopes (all other things supposedly being equal) was convenient but erroneous. New culprits will have to be isolated and bested. OEG thinks it has found some of them for the Navy.



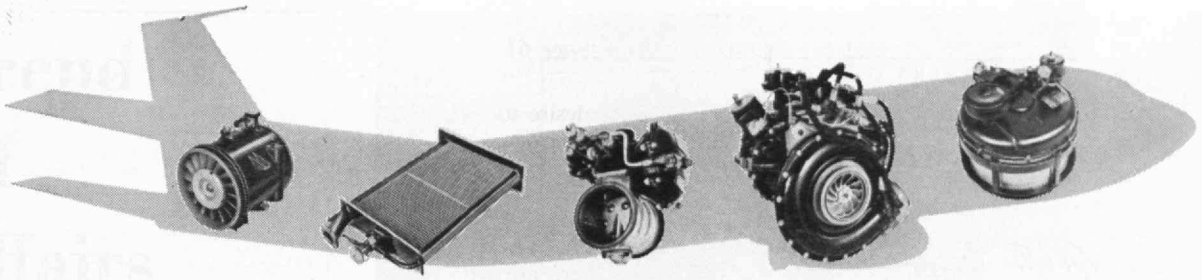
When is a sea not a sea? When it's a swell. Seriously. Seas and swells, ramp-to-touchdown distances, vertical velocities, wave-to-wave amplitude variations, and similarly specialized factors enter into "The Effect of Ship Motion and Flight Deck Geometry upon Carrier Air Operations." This is Naval Warfare Analysis Group Study No. 20 (NAVWAG being the long-range studies division of OEG). One interesting conclusion: Position of the touchdown point has a greater effect on precluded flying time than does ship length. And on the subject of ship length, the minimum recommended (for an angled-deck carrier) is 800 feet.



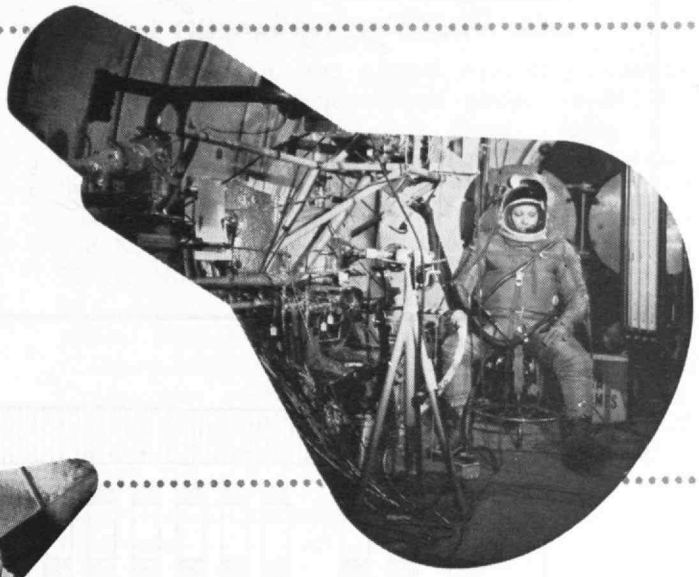
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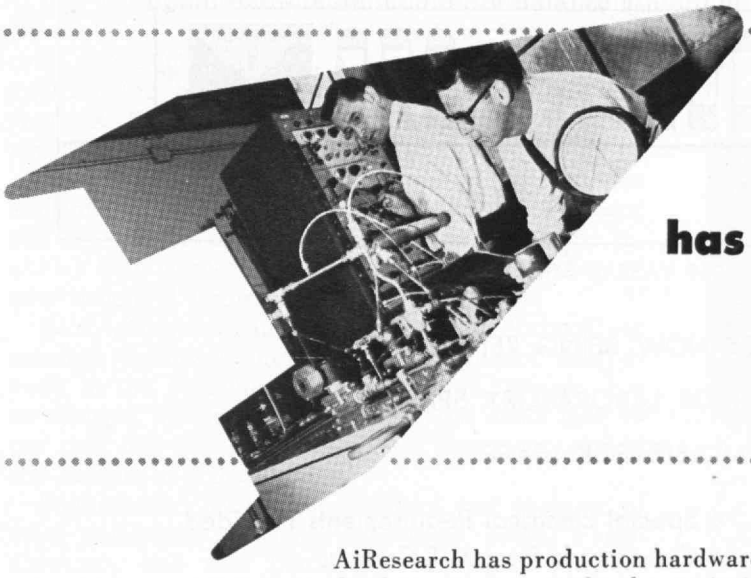
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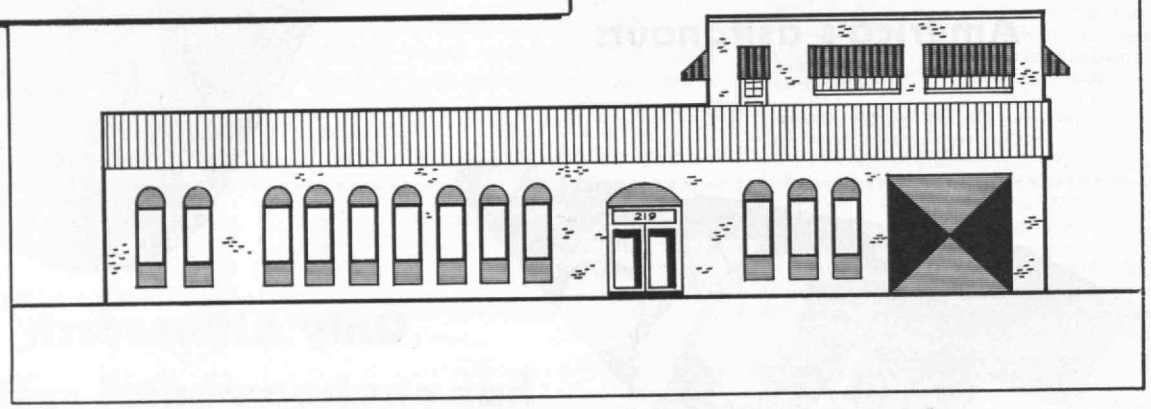
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P.S. It's the white one across Vassar Street from the athletic fields.....



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Trend Of Affairs



For Models of Structures

THE Perini Memorial Foundation, Inc., of Framingham, Mass., has granted $250,000 to the M.I.T. Second Century Fund for the establishment of a Laboratory for Models Structures Testing. Louis R. Perini, Boston industrial leader, indicated the grant was in memory of his brother, Charles Perini.

Although this grant is from a Massachusetts foundation to a Massachusetts institution, Mr. Perini commented, the new laboratory is expected to bring about needed improvements in the quality of structural design—including better and faster construction at a lower cost for the building and construction industry and the consumer—throughout the United States.

The new laboratory will be the first of its kind in this country. "Several distinguished architects have come to me, urging M.I.T. to establish such a laboratory for the benefit of their profession," Chairman James R. Killian, Jr., '26, of the Corporation, reported when the grant was announced.

"The Perini Foundation's generous gift will provide students at M.I.T., as well as architects, engineers, and constructors throughout the country, with the facilities they need to increase their understanding of new structural forms."

Such laboratories in Italy, Spain, and Portugal are making significant progress. Recent model analysis work in the Portuguese laboratory, for example, has so changed the design of concrete arch dams that 50 per cent less material is used now than was used in the designs of a decade ago.

Sophisticated use by the architect and engineer of steel, reinforced concrete, lightweight alloys, Ferro-Cemento, and new fabrication techniques provides them with materials to build structures that were impossible only a few years ago. Through experimental stress analysis in the new laboratory, architects and engineers will be able to increase their knowledge of structures.

In recognition of the interdisciplinary nature of the laboratory and the important contributions to be made by both the School of Architecture and Planning and the School of Engineering, the laboratory will be operated jointly by the Departments of Architecture and Civil Engineering. Professors Lawrence B. Anderson, '30, and Charles L. Miller, '51, heads of the respective departments, will head the steering committee, and Professor Robert J. Hansen, '48, will be the new laboratory's director.

Alumni Gifts to M.I.T. Rise

ON NOVEMBER 30, the Alumni Area Organization's leaders reported having received pledges to M.I.T.'s $66,000,000 Second Century Fund totaling $5,427,214. This is 68 per cent of the $8,000,000 which the Area Organization has undertaken to raise. Of this sum, $852,214 was pledged between October 19 and November 30, and $399,400 between November 22 and November 30. Pledges reported November 30 by C. George Dandrow, '22, from the New York area totaled $196,000.

Shown above receiving telephone reports from Area Organization workers are (left to right) Joe Harrington, Jr., '30, Vice-chairman; John J. Wilson, '29, SCF General Chairman; James R. Killian, Jr., '26, Corporation Chairman; Gregory Smith, '30, Vice-chairman, Area Organization; and Philip H. Peters, '37, Chairman.



Fabricating the reinforcing for a model dome to be tested in the Department of Civil Engineering are Aiyub A. Hoosenally, '62 (left), and H. G. Harris, '61, a graduate student.

Radar Studies of the Sun's Corona

FROM El Campo, Texas, the M.I.T. Lincoln Laboratory is now making systematic radar observations of the solar corona. William G. Abel, James H. Chisholm, Philip L. Fleck, Jr., '52, and Jesse C. James of the laboratory's staff reported measurements made on 32 days during an 11-week period in the December 6 issue of the *Journal of Geophysical Research*. Such measurements are being continued to learn more about the high-temperature, gaseous region that envelopes the visible part of the sun, and the showers of high-energy particles that are ejected from that corona. These showers often disrupt high-frequency radio communications on earth and sometimes have sufficient intensity to damage electronic instruments aboard space probes.

The antenna of the very high frequency radar system used in this research is pictured on page 17. The transmitter puts out 10 times as much power as the largest broadcasting station in this country, and the array of dipoles concentrates it in a tight, fan-shaped beam. In each run, the transmitter operates 16 minutes. Traveling at the speed of light, the radar signal reaches the sun in eight minutes. Another eight minutes is needed for the echo to reach the earth. The transmitter then is shut off and the receiver is operated for 16 minutes.

The sun is a "soft" radar target because the pulses penetrate the corona to various depths, and the returns consequently are more complex than they would be from a "hard" planetary surface. To help find the reflected returns in cosmic noise and the radio noise that is generated by the sun itself, a particular frequency pattern is impressed on the transmitted signal. This is done by switching the signal frequency up or down very slightly in a pseudo-random but carefully controlled way.

The purpose of these measurements is to obtain information about the nature and extent of electrical phenomena and disturbances in the corona, rather than to measure the distance from the earth to the sun. Systematic radar observations can supplement findings by radio and optical techniques, and thus are expected to lead to a better understanding of the scale and dynamic motion of solar disturbances. Improved predictions would be helpful in efforts to avoid deleterious effects on radio communications and hazards to costly, important experiments in space.

Cambridge and M.I.T.

IN ANNOUNCING a $15,000 grant to the Second Century Fund from the Harvard Trust Company of Cambridge, its Chairman, Robert R. Duncan, said: "It is a tangible way of recognizing and showing our appreciation of the importance of the educational institutions in the Cambridge community, and in particular the vital role that M.I.T. plays in its economic and cultural life. . . . We wish M.I.T. success in its ambitious program for the future—a program which we are sure will prove immensely valuable to Cambridge as well as to the nation as a whole."

In accepting the grant, Chairman James R. Killian, Jr., '26, of the M.I.T. Corporation, called it "heartening evidence" of recognition that "the needs of education today are so great that the assistance of business and industry is indispensable."

Special Summer Programs

PREPARATIONS are being made now for a number of special summer programs at M.I.T. again this year. These programs started 11 years ago are designed for professional men and women from outside the Institute, and vary in content from year to year. Some provide an intensive review of an established field and some introduce new aspects of pressing scientific and technological problems.

Last summer 26 special programs were attended by representatives of more than 300 industrial firms and many governmental agencies and educational institutions. Fifteen per cent of the registrants were from states west of the Mississippi and 5 per cent from foreign countries.

New England Pottery

AN UNUSUAL COLLECTION of early New England pottery and artware—typical of what was used in the colonial home—was displayed recently at the M.I.T. Faculty Club. Assembled by Professor Frederick H. Norton, '18, and Assistant Professor Robert L. Coble, '55, of the Division of Ceramics, the exhibit contained rare pieces representing the four types of early pottery made and used in New England.

The first New England pottery works was established in Gloucester about 1650 and the last of the old-time potters worked in the Paige Pottery, Danvers, around 1931. When English imports were cut off in 1812, small-town potteries flourished to the extent that there were as many as 60 small potteries in the town of Danvers alone, and approximately 30 potteries in Portland.

The earliest pottery hand-crafted in New England was redware, fragile and seldom decorated, used mostly for cooking and tableware and made from local brick clay which could be found throughout New England. At the beginning of the Nineteenth Century redware gave place to the more durable stoneware, the clay for which was shipped from New Jersey. Stoneware jars, bottles, pitchers, and cups were glazed with salt on the outside, and on the inside with a smooth enamel. Charlestown, Mass., was the site of one of our largest stoneware potteries; Bennington, Vt., was well known for its flint-enameled stoneware; and the collection includes a rare specimen of stoneware from the Winslow pottery in Portland, Maine.

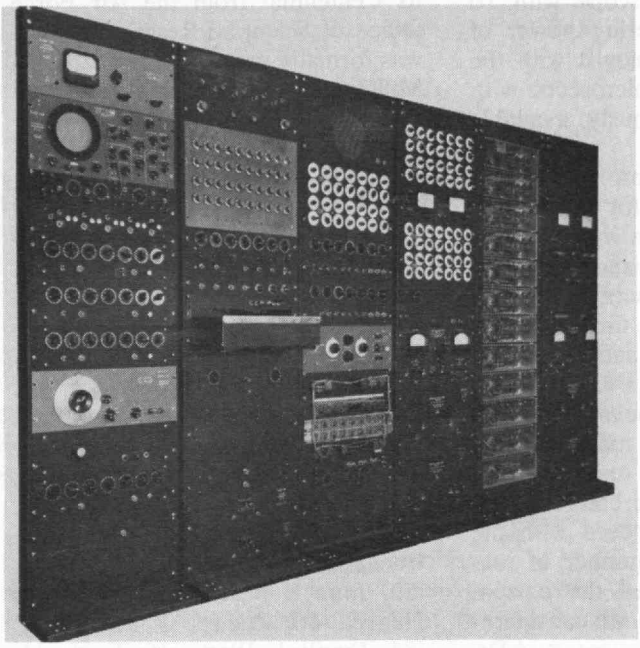
Ten years ago, Professor Norton located a barrel of several hundred Low tiles (made in Chelsea around 1850) in a Dorchester barn, and the exhibit included examples from this find. Handsomely decorated with bas-reliefs of heads, flowers, and geometric designs, Low tiles were made from a clay found on Martha's Vineyard. The earliest decorative art tiles were produced by the Robertson pottery, also in Chelsea, but were often unglazed, brown and dull in finish in comparison to the glazed green, blue, or brown tiles made by the Low pottery.

The exhibit also included examples of the famous Grueby tiles and artware, produced in South Boston, and now in great demand by collectors. The Grueby pottery received high awards in international exhibitions, for its glazes and incaustic-decorated tile with semi-matte finish were seldom equaled in quality. Many Boston subway stations are still lined with Grueby tiles.

A Few Words About DAVO

AFTER addressing M.I.T. Alumni during the telephoned "Voices of Technology" program last fall, DAVO, The Dynamic Analogue of the Vocal Tract, spoke and sang a nursery song for the Acoustical Society of America.

DAVO is much larger than any person's vocal apparatus, and less prone to say too much. It generates one syllable at a time, and splicing bits of tape together to produce sentences takes hours. It can produce electrically, however, virtually all of the sounds of the



The machine that produces sounds the way a person talks.

English language—and do so in ways that are analogous to those that people use. This distinctive feature makes DAVO helpful to investigators of the configurations and temporal variations within the human vocal apparatus that enable us to talk to each other.

Michael H. L. Hecker, '61, Arthur S. House, and Kenneth N. Stevens, '52, of the Research Laboratory of Electronics, both demonstrated DAVO's mastery of the alphabet and explained its usefulness at the acoustical society's meeting in Cincinnati. Qualitative descriptions of the way we encode discrete symbols into continuous audible signals when we talk can be quantified with this speech simulator help. Thus it can improve our understanding of how we talk and possibly result in better communication between humans and machines.

On the Bridge of the "Enterprise"

THE COMMANDING OFFICER when the aircraft carrier *Enterprise*—the biggest and fastest warship afloat—began her sea trials in November was Captain Vincent Paul de Poix, '46. This nuclear-powered carrier, the press reported, is as long as a 100-story skyscraper is tall and faster than some torpedoes. It will carry 100 planes and be at the core of a new task force. The *Enterprise* makes no smoke, and can go 400,000 miles at 20 knots without refueling.

The Young Commuters

ABOUT one-fourth of the commuting students at M.I.T. now belong to a Non-Resident Students' Association organized three years ago and headed by Philip D. Cunningham, '62, of Medford, Mass. Their organization has headquarters at 318 Memorial Drive and sponsors scholastic, athletic, and social affairs. Last November the M.I.T. group was host to representatives of similar organizations at eight other New England colleges, who spent a weekend discussing ways of promoting participation in campus life by students who live off campus.

The New 'M.I.T.' in Kanpur

NINE American universities including M.I.T. are now preparing to help the Indian government develop its new Institute of Technology at Kanpur. Professors William W. Buechner, '35, Louis D. Smullin, '39, and Norman C. Dahl, '52, recommended the plan being followed after an extensive tour of India and study of its technological schools last year; and the formation of this American educational consortium was announced during Prime Minister Jawaharlal Nehru's recent visit to this country.

Kanpur is an industrial city of about 1,300,000 in the Ganges River plain on the main railroad and highway between New Delhi and Calcutta. Within the last 10 years, India has established three other national institutes of technology, at Kharagpur, Bombay, and Madras. The latter two are being helped, respectively, by Russian and West German funds and personnel. The Indian government requested American aid for the institute at Kanpur, and the International Co-operation Agency (ICA) of the U.S. State Department sought the help of American educators to develop this school.

The M.I.T. team that was sent to India by The Ford Foundation last year to study the problem found sharp contrasts between technological education there and in this country. American professors sent to India previously had been handicapped by a shortage of textbooks, heavy teaching loads, and an examination system quite different from ours. The M.I.T. men, consequently, recommended steps to alleviate such difficulties, and a new approach to the problem.

They proposed that the ICA seek the help of a group of schools, rather than a single school, and this has now been arranged. In addition to M.I.T., the participants in the consortium are the California Institute of Technology, Princeton University, the University of California, Carnegie Institute of Technology, Ohio State University, Purdue University, the University of Michigan, and Case Institute of Technology. The program will be administered by Educational Services, Inc., and guided by a steering committee from the schools, on which Professor Smullin will represent M.I.T.

Professor Dahl, who returned to India this winter, will be project director, and the primary task of professors sent by the participating schools to join him will be to help India develop its own educators, encourage research, and adopt new methods.

The first classes already have been enrolled and architects are planning the buildings that will arise on a 1,000-acre site.

"Nothing quite like this has ever been done before," Ambassador John K. Galbraith told the press.

Magnet Builders and Users Confer on Future Research

THE National Magnet Laboratory being built at M.I.T. under a $9,500,000 contract will be operated very much like the Brookhaven National Laboratory on Long Island and the CERN Laboratory in Europe. It will produce the world's strongest continuous magnetic fields, and these will be available to researchers from institutions throughout the country.

More than 700 scientists and engineers interested in high magnetic fields attended a conference sponsored by the Air Force Office of Scientific Research at the Institute in November. This was an international meeting at which 12 countries were represented, and the objective was to exchange ideas regarding both the generation of high magnetic fields and their use in studies of solid-state, plasma, and nuclear physics; biology; and other topics.

Speaking on this occasion, M.I.T.'s Provost, Charles H. Townes, discussed the dangers which many scientists foresee in "big science" and the complexities of research support from many different places, rather than from a unified governmental source. There may be worse dangers than bigness alone, he suggested, and there may be advantages to having more than one agency responsible for financial support of research.

If, Dr. Townes observed, there had been a single monarch and unified policies in Europe in the Fifteenth Century, Columbus would need have been turned down only once and might not have been able to finance a voyage across the Atlantic. If, moreover, he had gone about it the way some people favor tackling a big job, he might have made a series of trips, each one only about 100 miles longer than the preceding one. In either case, America would not have been found in 1492.

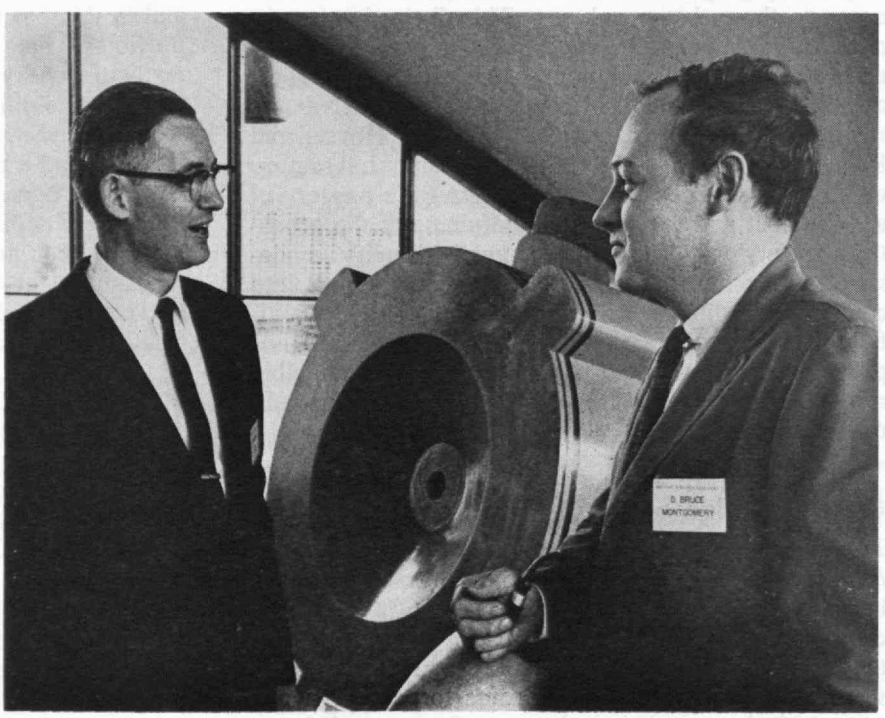
Professor Francis Bitter reviewed the last quarter of a century's progress in attaining high, continuous magnetic fields and described the way in which fields of 250,000 gauss will be produced in the new laboratory. "I am looking forward to seeing what they will reveal," he said, "with the same eagerness that an astronomer would look forward to using a new telescope with 10 times the light-gathering power of his old one, or a biologist with the prospects of a new microscope with 10 times the previously available resolving power."

Donald T. Stevenson, '50, explained the reasons for proceeding with construction of a water-cooled, room-temperature system, powered by direct current generators.

"At about the time final decisions on the power supply and laboratory layout were made," Dr. Stevenson said, "the breakthrough in superconducting magnet materials occurred and forced a reappraisal of these decisions. After careful study it was decided to proceed with the original plan for a number of reasons." These included the current state of technology and considerations of cost. But it is clear, said Dr. Stevenson, that superconducting magnets will have an important role in future research and a fully equipped modern laboratory will need both types of magnets in its arsenal of experimental facilities.

Benjamin Lax, '49, Director of the new laboratory and head of the Solid State Physics Division at Lincoln Laboratory, was chairman of the conference. James R. Killian, Jr., '26, of the M.I.T. Corporation, welcomed the group, and accepted a plaque felicitating the Institute on its Centennial from the Air Force Office of Scientific Research, which was formally presented by Dr. Knox Millsaps, a former member of the M.I.T. Faculty.

Henry H. Kolm, '50, was the conference secretary, James M. West was in charge of logistics, and many other representatives of the Institute's Faculty, staff, and Alumni participated. Among them were Institute Professor Francis O. Schmitt, Professors William P. Allis, '23, Sanborn C. Brown, '44, and David J. Rose, '50. Among those presenting papers were D. Bruce Montgomery, '56, Clark E. Taylor, Jr., '39, Donald T. Stevenson, '50, Thomas Erber, '51, Solomon J. Buchsbaum, '57, Morton A. Levine, '52, John K. Galt, '47, Warren E. Henry, '46, Zdenek J. J. Stekley, '54, Frank J. Blatt, '46, Lucien J. Donadieu, '56, Carl L. Kolbe, '48, and George D. Kneip, Jr., '52.



Benjamin Lax, '49 (left) and D. Bruce Montgomery, '56, with a model of the powerful magnet that is to be built for the new National Magnet Laboratory.

M.I.T. Lincoln Laboratory: Its Origin and First Decade

It has helped build major air defense systems and is pressing on now to meet future challenges

BY WILLIAM H. RADFORD, '32

*Associate Director, Lincoln Laboratory**

LINCOLN LABORATORY was established in 1951 to advance the design of modern air defense systems, at the joint request of the U.S. Army, Navy, and Air Force, as a research and development activity of M.I.T. The Soviet Union's detonation of a thermonuclear device in 1949—years before such an event was expected in the United States—had created an urgent need for improvement in early warning and air defense capabilities, especially in view of the continuing evolution of ever-faster military aircraft available in ever-greater numbers.

Several groups of scientists, including the Air Defense Systems Engineering Committee (ADSEC) in 1949-1950, and the Project CHARLES study at M.I.T. in early 1951, had undertaken intensive analysis of this problem. A practical solution of the air defense problem, it was clear, would require utilization of high-power, long-range radars, reliable wire and radio communication facilities, and large-scale, high-speed digital data processors.

All of these devices depend upon fields of science and technology in which M.I.T. has long been active. They are studied both in its classrooms and in a number of its research and engineering laboratories. These included the Radiation Laboratory during World War II and, after the war, the Research Laboratory of Electronics and the Digital Computer Laboratory. Because of this background and its unique relevance to a national problem of great urgency, the Institute agreed to establish and operate the Lincoln Laboratory.

The SAGE System

The first major undertaking of Lincoln was the design and initial development of the Semi-Automatic Ground Environment (SAGE) System for air defense. The basic concept for this system came from the ADSEC and was endorsed by Project CHARLES. In SAGE, radar data are automatically transmitted to a central high-speed digital computer. It generates real-time displays, enabling human operators to make command decisions, then guides defensive weapons against attacking aircraft. The feasibility of the idea was demonstrated in 1951 with the aid of the Whirlwind I computer that had been developed previously in the Digital Computer Laboratory under Navy sponsorship.

*Operated with support from the U.S. Army, Navy, and Air Force.

The SAGE system now is in operational use by the Air Force to protect the continental United States from attack by aircraft. It covers the seaward approaches and parts of Canada as well. In 1958, when several SAGE sectors were already in operation, Lincoln Laboratory turned over responsibilities for the continuing technical development of the SAGE system, and its integration with other defense systems, to the newly established MITRE Corporation.

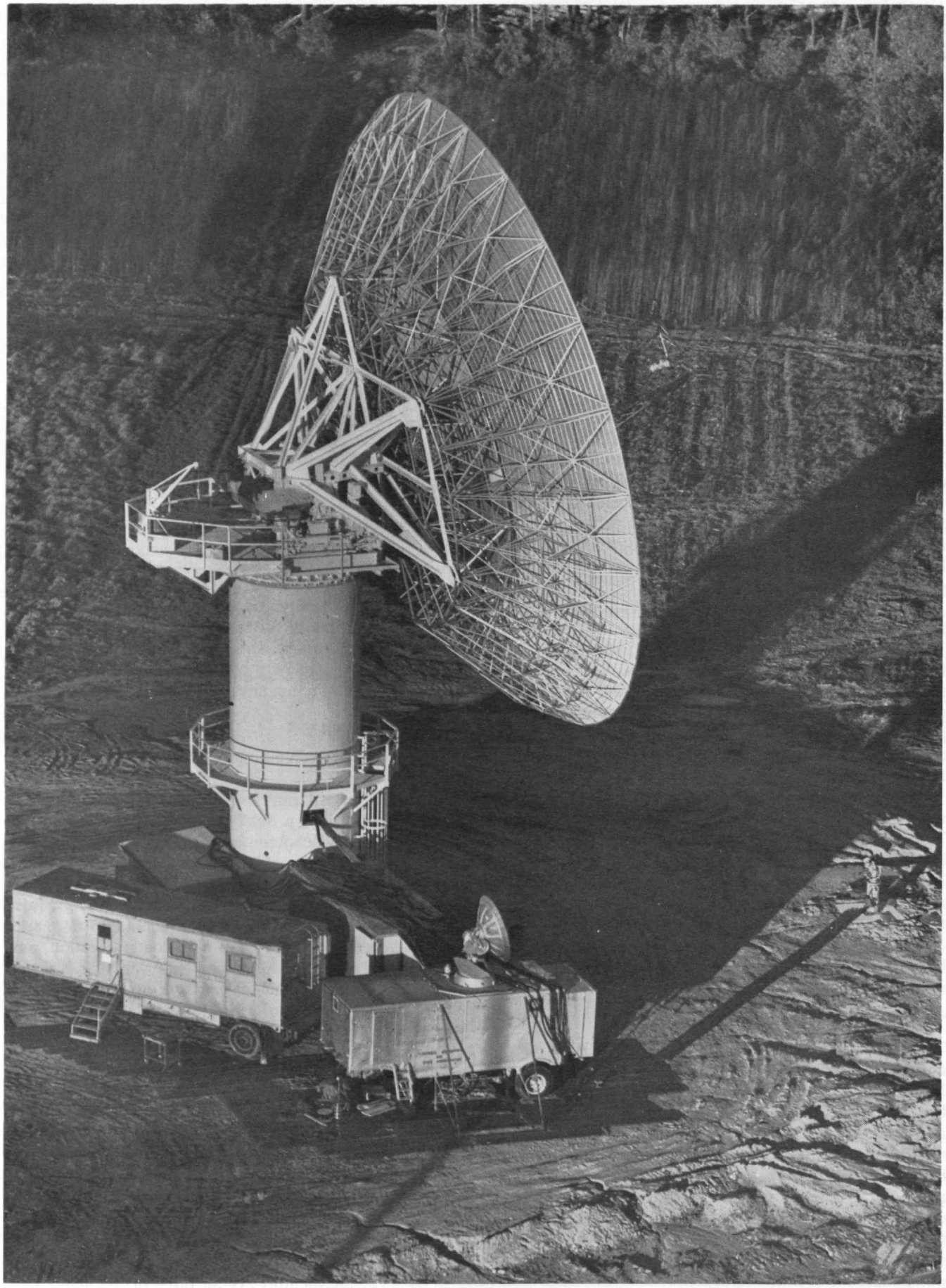
SAGE is by far the largest data-processing system ever attempted. The map on page 18 conveys some idea of its complexity and extent. Dozens of huge computers and scores of radar sites are represented by the symbols on the map. This is a graphic illustration of the size and complexity of today's military systems—often discussed but not always fully recognized.

DEW and BMEWS

The Distant Early Warning (DEW) Line was Lincoln's second major project. The DEW Line extends across the northernmost fringes of the continent from Alaska to Greenland. It is a tightly coupled system of surveillance radars and communication links arranged to give early warning of every aircraft approaching via polar routes. The basic plan for the DEW Line came from the Summer Study at Lincoln Laboratory in 1952. Major technical contributions by Lincoln include tropospheric-scatter techniques for lateral radio communication, new radars, and rigid plastic radomes to protect large search antennas from the hostile Arctic environment. The DEW Line went into operation in 1957, and, with SAGE, is now in use as a key facility of the North American Air Defense Command.

The Ballistic Missile Early Warning System (BMEWS), the missile-age counterpart of the DEW Line and the most recent of the three major U.S. air defense systems now in operational use, had its origins at Lincoln in 1953-1954 when studies were undertaken of the properties of ballistic missile trajectories and problems of radar detection and tracking. Lincoln played a major role in the technical development of the system concept, radars, and data-processing techniques now used in BMEWS.

Thus essential features of all three of the major U.S. air defense systems now in operation originated at Lincoln Laboratory. In each case Lincoln also played a major role in the technological developments that con-



The World War II radar on the van could track a moderate-sized plane at a range of about 50 miles. The big Lincoln re-entry tracking radar near Wallops Island, Va., can pick up a target the size of a baseball that is 100 miles away.

verted a concept into an operational system, sharing credit with defense agencies and contractor teams that performed outstanding feats of production development, fabrication, transportation, and installation.

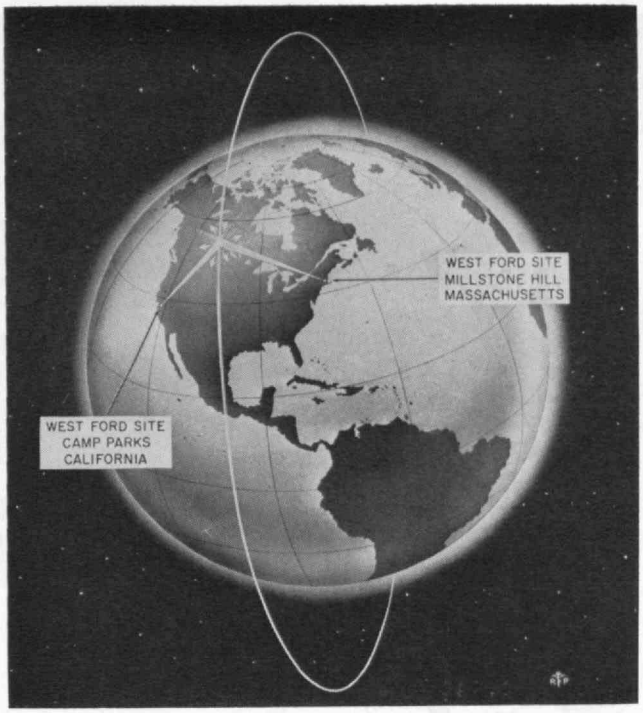
Representative Contributions

A comprehensive account of all the discoveries and developments realized from Lincoln research in the last 10 years would be unwieldy, representing—as it would—some 6,000 man-years of professional scientific and engineering effort. The results can be seen in many important aspects of the three large air defense systems, in a variety of equipment, devices, and techniques serving both the military and the civilian communities, and in the pages of numerous scientific journals.

Lincoln contributions to radar technology have included higher-power transmitters, high-power components (such as duplexers and rotary joints), maser and parametric amplifiers for low-noise receivers, large antenna systems, rigid radomes, and advances in the theory and practice of signal detection and processing. In addition to being incorporated in military equipment and systems, these developments have contributed to radar astronomy and to new knowledge of upper atmospheric phenomena.

Parallel Lincoln efforts in radio communication have yielded systems for tropospheric and ionospheric scatter communication that are now widely used, and orbital scatter and other satellite communication techniques still under investigation. Digital data transmission techniques developed initially for SAGE have found their way into other systems, civilian and military, as have various techniques that grew out of the statistical theory of communications. A recently developed coding technique for automatic error detection offers new promise for economical, long-haul, error-free digital data networks.

Data-processing techniques and equipment developed at Lincoln Laboratory have been important in both radar and communications. They also have greatly influenced the development and utilization of the modern high-speed digital computer. The ferrite core memory was an M.I.T. contribution of fundamental importance. Ever-faster components and more sophisticated machines, and correspondingly more versatile methods of control and display, have encouraged steady progress and extensive use of computers.

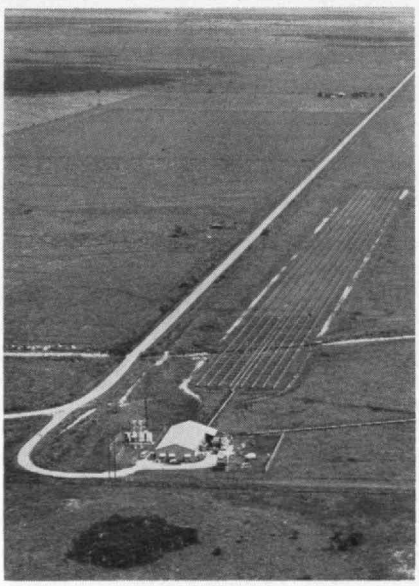


Lincoln is investigating systems of world-wide communication and highly reliable, accurate, data transmission.

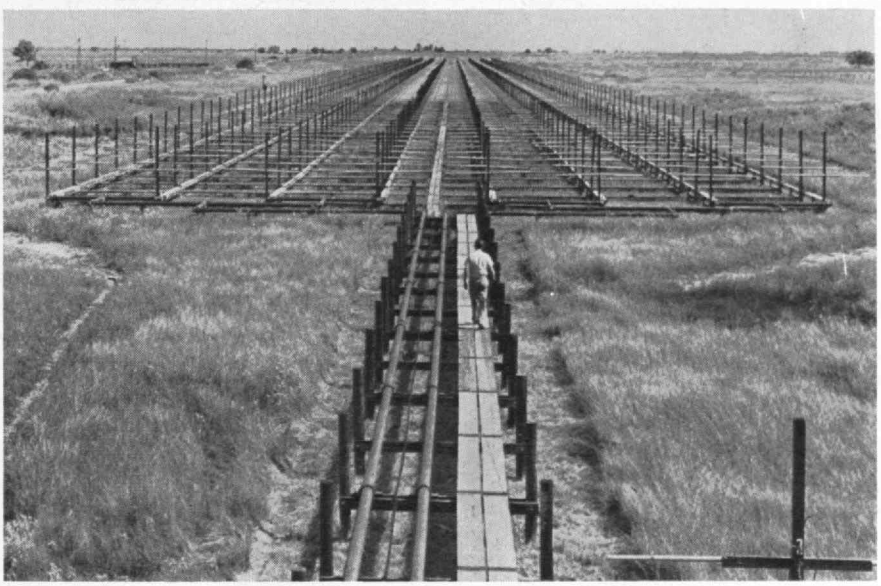
Interplanetary Radar

Perhaps the best-known symbol of many of these Lincoln developments is the Millstone Hill radar system in Westford, Mass., which went on the air in late 1957 just in time to track the first Sputnik. A developmental prototype for the tracking radars in BMEWS and a test bed for many BMEWS components and techniques, Millstone has played an equally important role in radio

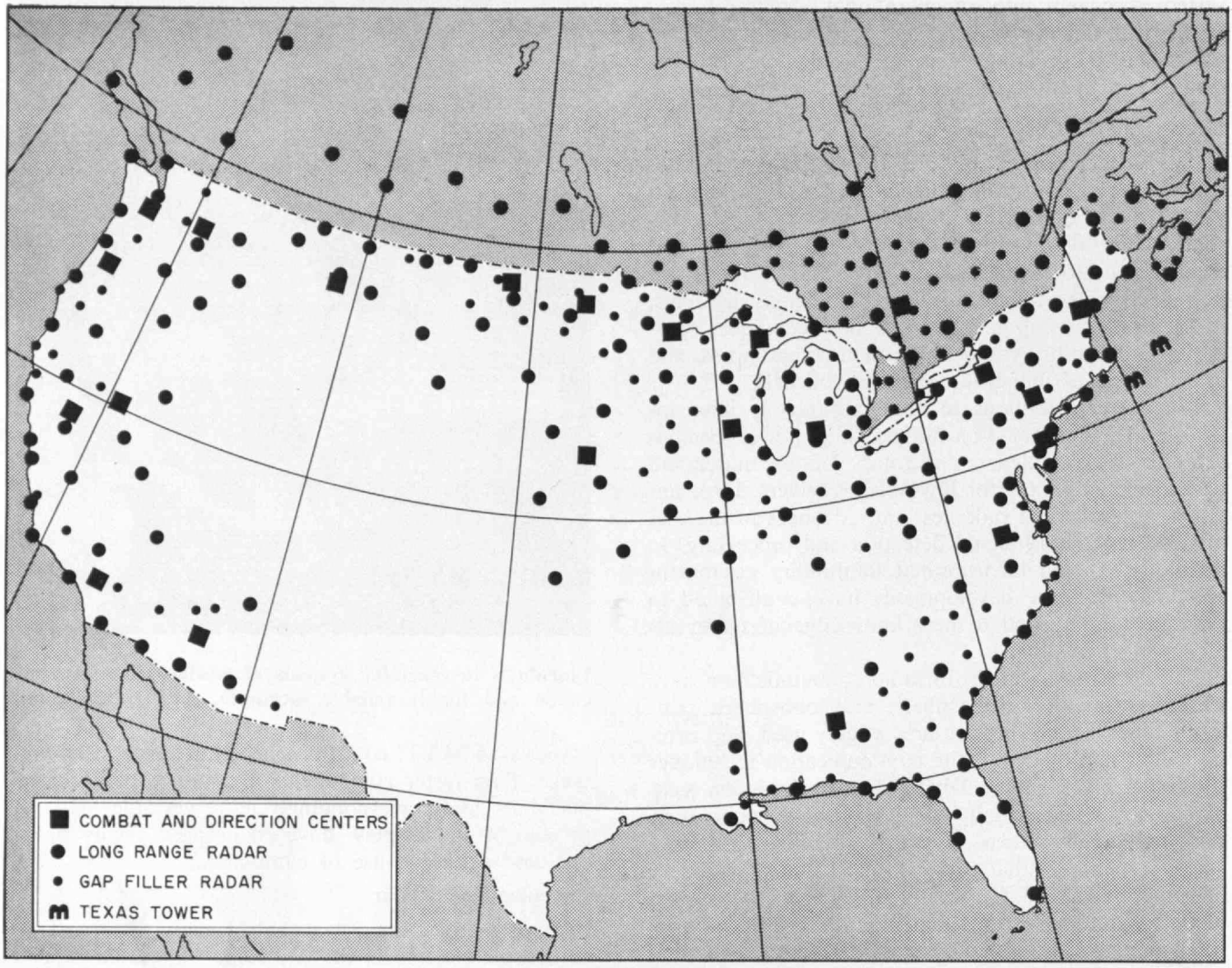
(Continued on page 40)



Lincoln's space radar at El Campo, Texas, is about a third of a mile long.



This antenna array in Texas has 1,024 dipoles driven by a 500,000-watt radio transmitter. It is being used to obtain radar echoes from the corona of the sun.



Lincoln's first big job was the design and initial development of the SAGE System for air defense (described on page 15).



Lincoln's quarters provided by the Air Force in Lexington, Mass., are being increased to a total of about 430,000 sq. ft.



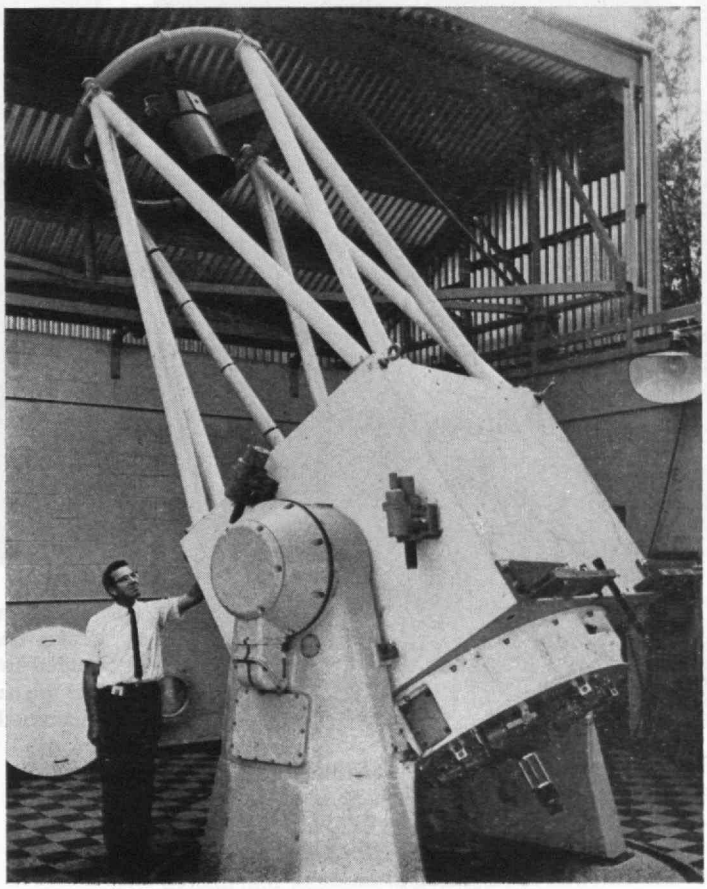
The Haystack radome, largest of its kind in the world, stands on a Tyngsboro, Mass., hill. It will shelter a highly sensitive 120-foot antenna. It was built for the Air Force by industrial contractors from basic designs developed at Lincoln Laboratory.

A Camera Tour of Lincoln

Its men and instruments link the academic and industrial worlds in the interest of the government . . . They are exploring basic natural phenomena and hastening the exploitation of new concepts such as have led to improved radar, computers, and communications during the laboratory's first decade.



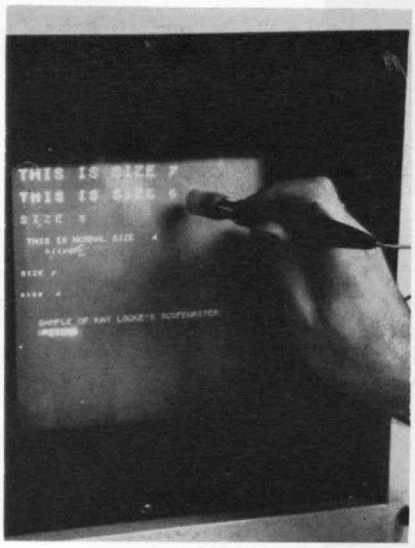
No one strolls into Lincoln Laboratory unidentified, but the receptionists, including Mrs. Rita M. Felton (above) greet more than 10,000 business, government, and academic visitors every year.



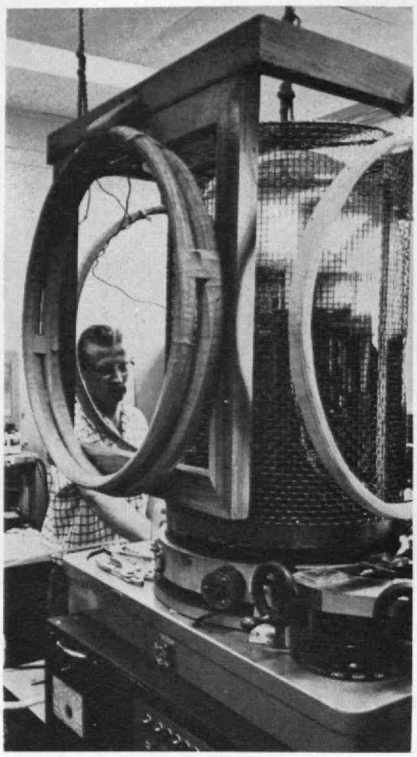
A 48-inch spectrometric telescope (at left) is one of the tools built for Lincoln's field site at Arbuckle Neck, Va. It is for research pertinent to getting space vehicles back to earth.



Lincoln's shops make only new and special equipment for development projects. Above is a conical backup structure for an experimental radar reflector.



Lincoln is concerned with both rapid communications from men to their machines and the rapidity of the response of a machine. The scope above is used with the all-transistor TX-2 computer, and the light pen is one of the ways of communicating with this machine. At the right are two of the devices used in producing high-speed memory planes for the FX-1, the forerunner of a new generation of very fast computers. (See Technology Review, November, 1961, page 30.)



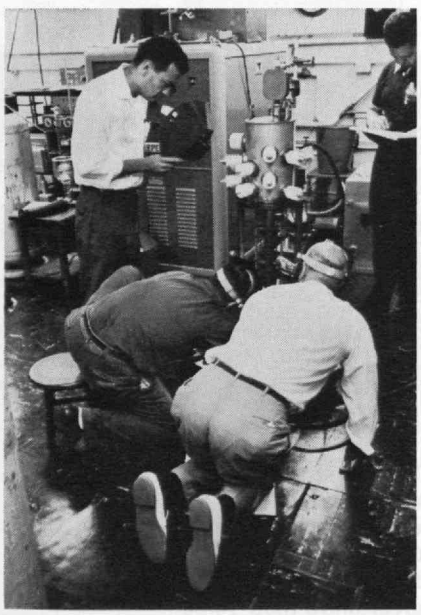
This vacuum chamber was used in the construction of the FX-1's thin-film magnet memory. Information is stored in this memory in tiny rectangle dots of metal on a glass plate.



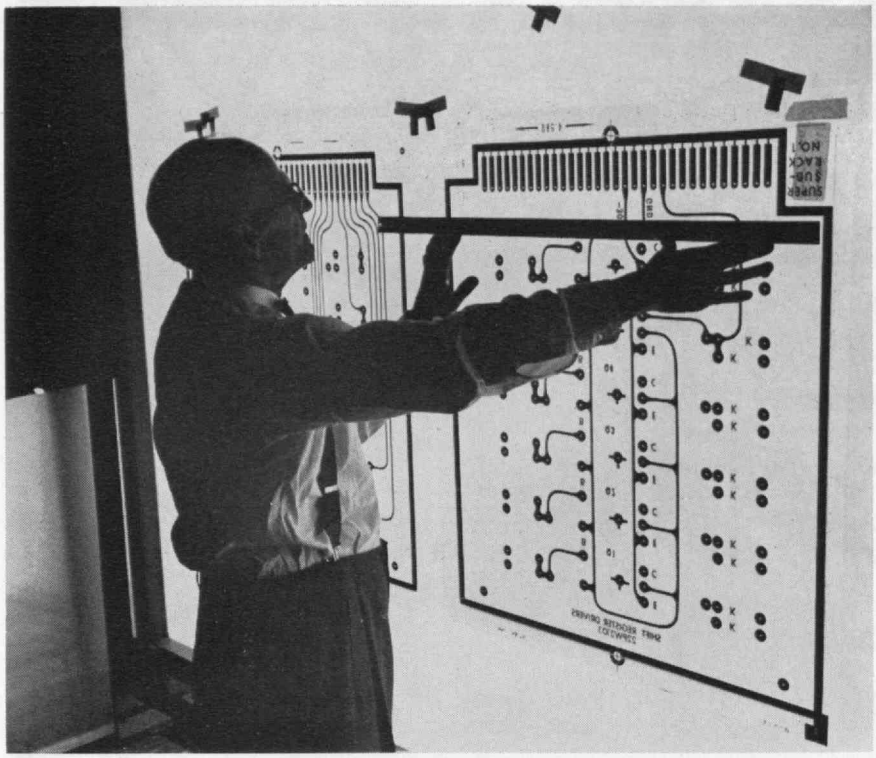
By watching the wave form on this oscilloscope, and indexing the device behind her with the typewriter, this lady determines whether magnetic dots have been correctly deposited.



Lincoln often is called a defense laboratory—a term that sometimes obscures basic contributions that its staff has made in such fields as solid-state physics. Here Harry C. Gatos, '50, a metallurgist and associate head of the solid-state division, is seen conferring with colleagues. Materials essential to the creation of electronic devices are investigated in this division.



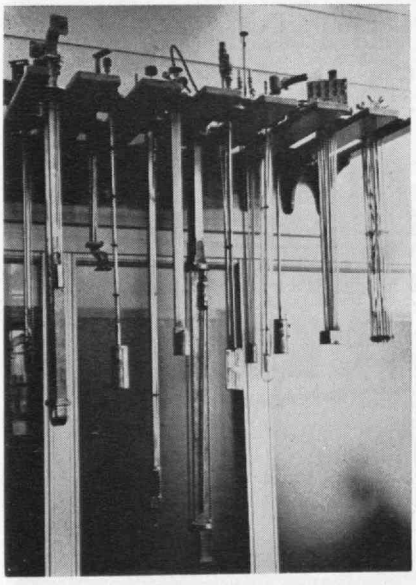
Some things can't be done sitting behind a desk. Here a cathode is being welded to a biased collector tube under the supervision of men intensely concerned about how it will operate.



Printed wiring plays an important role in electronics, Lincoln Laboratory's basic technical area. Its use in experimental apparatus calls for more facilities than you are likely to find in the radio ham's basement. Here, Earl M. Savage is preparing to take the photographic step in the wiring process, with a big camera that is part of the laboratory's special equipment.



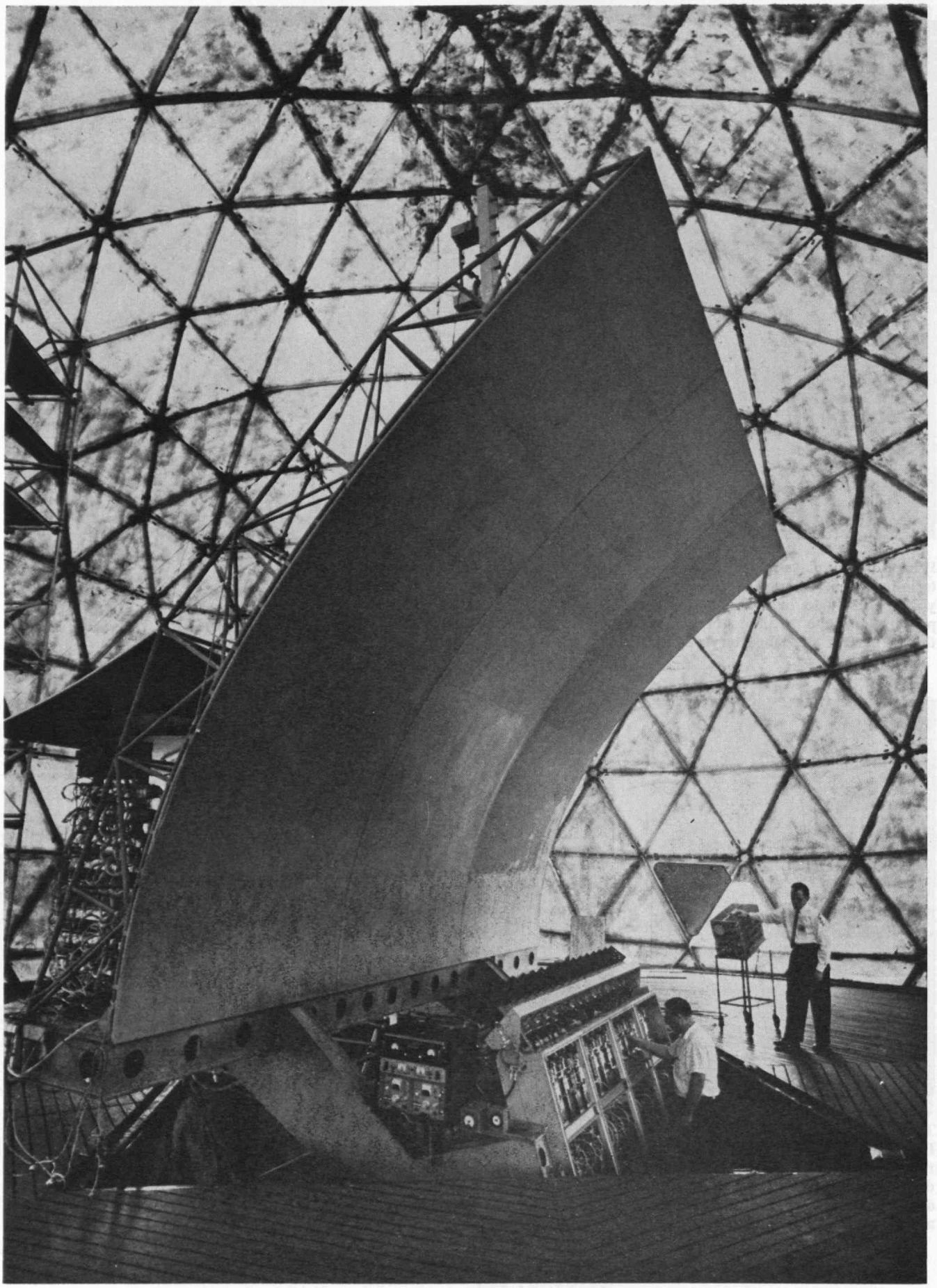
The drawing on which Jeanne M. Gray is working describes a radar contact with the solar corona, from El Campo, Texas, which is part of Lincoln's exploration of the earth's environment.



These are masers developed at Lincoln Laboratory. In the center, sixth from right, is the one that made the first radar contact of Venus possible. It is cut open to show the crystal used. Masers are an important new kind of amplifier.



In the re-entry simulating range, engineers study the effect of the passage of hypervelocity projectiles through various environments. The trails of these projectiles are studied by microwave, optical, and spectroscopic techniques. This is an example of the basic work that Lincoln Laboratory undertakes in order to help find solutions to problems of national defense.



THE BEAM of this phased array radar (in a radome on the roof of the Lincoln Laboratory) can move through any angle up to 90 degrees in a few millionths of a second. The scanning is done electronically rather than mechanically.

Lincoln Laboratory and the Greater M.I.T. Community

BY CARL F. J. OVERHAGE

*Director, Lincoln Laboratory**

LINCOLN LABORATORY is a challenging enterprise in a complicated world. The technical problems are difficult, the facilities are elaborate, and the human relationships are exposed to strong and conflicting forces from the outside. In moments of fatigue, my associates and I think wistfully of the age of individualism in science and technology, when the great advances were made by men like Lord Rutherford and Irving Langmuir working in small laboratories with a few assistants.

The same nostalgic images of a simpler world must be in the minds of many of our visitors, when after a strenuous tour of the Laboratory they stop in my office to say good-bye. Almost invariably they have been impressed by the scale and the total range of our activities. "But why," they ask, "why is M.I.T. involved in all this?" It is a fair question. We seem to have come a long way from the idea of a university consisting of Mark Hopkins and a simple bench in a log hut.

Mid-Century Complexities

This is 1961. Science and Technology are dominant in human society throughout the world. Material progress is potentially unlimited; the opportunities for new advances appear to multiply; the evolution of technical knowledge is going forward with startling speed. We are witnessing a world-wide competition between two conflicting social systems, each intent upon controlling and exploiting the forces of science and technology. Altogether, there is a sense of great adventure all around us, and it seems to me that no time in history can have been as exciting to scientists and engineers as the present.

To live in such a world one must pay a price. Much of the price is in the domain of the human spirit and cannot be discussed here. In the technical domain the price is complexity, a kind of unprecedented complexity that can be as distressing emotionally as it is fascinating intellectually. This is the price, and it would be churlish to complain; for the world is as we have made it.

Research Centers for New Technologies

In research and development, this complexity manifests itself in the large team efforts and extensive facilities that have come to supplement the research done in the traditional manner by outstanding individuals in small laboratories. The trend toward large integrated research centers is particularly marked in the new areas of technology that are associated with our national objectives in the exploitation of atomic energy, in the development of new weapon systems, in the conquest of space, and in other fields.

In sponsoring research and development toward these large objectives, the federal government has had the difficult task of deciding how to establish the needed facilities, how to organize the new research teams, and how to manage their programs. Sometimes the new task could be handled by extending the scope of existing government laboratories: Thus the program of the original NACA laboratories was reoriented toward space flight problems in 1958, when these laboratories were absorbed into the National Aeronautics and Space Administration. Sometimes an industrial contractor could be found to accept responsibility for a new center: Thus the General Electric Company is operating the Knolls Atomic Power Laboratory for the Atomic Energy Commission. And in some important cases, the federal government has turned to the country's universities.

Universities as Contractors

The tasks that were deemed particularly suitable for university contracts were those for which the universities had unique reserves of highly trained individuals, men who had either pioneered in the early exploration of the new territory or were sufficiently well-grounded and versatile to become proficient in a short time. Typical of such a situation is the Los Alamos Scientific Laboratory which had its roots in the group working at the University of California under Lawrence and Oppenheimer. Another case is the Lincoln Laboratory whose antecedents at M.I.T. have been described in an earlier article (*on page 15*).

In addition to its professional competence, a university has secondary characteristics that make it attractive to the government as a contractor for the operation of a research center. The university's concern with teaching as its chief purpose and the absence of manufacturing or marketing problems tend to focus attention on the scientific and technological fundamentals of the task. Because of this orientation, the university's technical judgments command general respect with political as well as industrial groups.

The universities of the United States have been responsive to the appeals of the government. They have considered themselves participants in the world of affairs as well as the world of thought, and they have

*Lincoln Laboratory is operated with support from the U.S. Army, Navy, and Air Force. The author is indebted to James McCormack, '37, Vice-president of the Institute, and to Gordon S. Brown, '31, Dean of the School of Engineering, who have read this article in draft form and have given him many valuable comments.

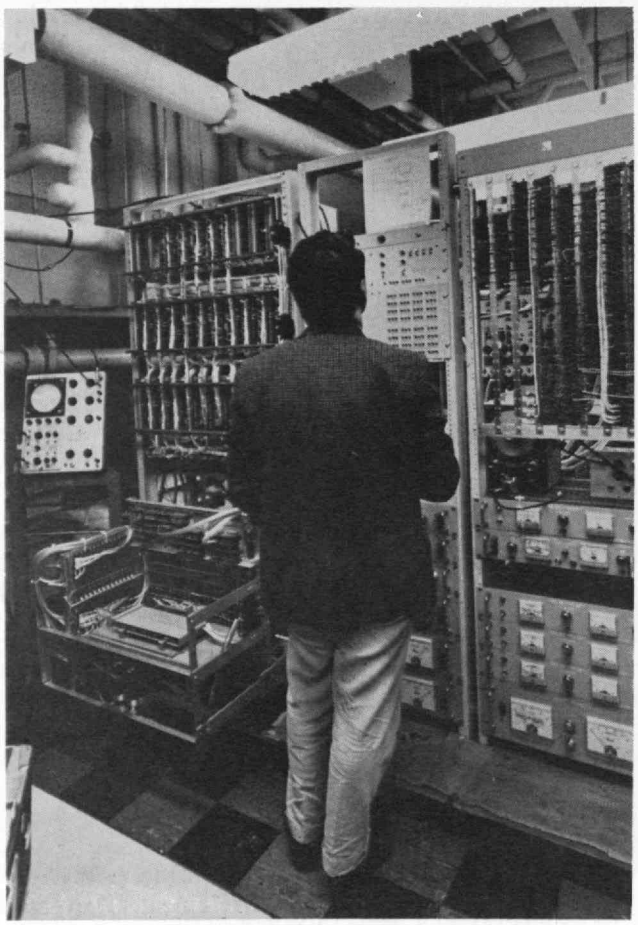
accepted large and unaccustomed responsibilities as inescapable obligations in times of crisis. At M.I.T., the task of establishing and operating Lincoln Laboratory was taken on in 1951 in the same spirit of national service in which the M.I.T. Radiation Laboratory was created 11 years earlier, on the eve of a great war.

M.I.T.-Lincoln Interactions

The new laboratory is now 10 years old. During this period of growth, M.I.T. has had to solve important policy problems in establishing and maintaining a suitable relationship between the research activities at Lincoln Laboratory and the primary educational responsibilities at Cambridge. Should the research center at Lexington be operated at arm's length to reduce its impact on the quieter and more thoughtful world of the campus, or should interactions between the two groups be encouraged? Isolation, co-operation, or integration? Can students and Faculty make significant contributions to Lincoln activities? And conversely, is there a role for Lincoln Laboratory in education?

After 10 years of discussion and judicious experimentation the answer is now clear: An increased and selectively controlled interaction between M.I.T. and Lincoln will yield great gains for both.

For Lincoln Laboratory one of the most important advantages of belonging to M.I.T. has been the ever-present influence of the Institute's high standards of intellectual performance. Each scientist and engineer at Lincoln Laboratory who communicates the results of his work to a technical audience knows that he will be considered to represent M.I.T., and that he will be judged accordingly.



In the technical domain, the price is complexity . . .

Along with M.I.T.'s "emphasis on excellence," there has been a rich and steady stream of new ideas and advanced concepts flowing from Cambridge to Lexington through countless meetings and seminars, through the participation of M.I.T. Faculty members in Lincoln research, through the utilization of Lincoln facilities by M.I.T. graduate students, through the pursuit of graduate studies in Cambridge by Lincoln staff associates.

Lincoln Laboratory and Engineering Education

What, in return, can Lincoln Laboratory do for engineering education? It can provide entirely new opportunities to advanced students who wish to work in the complex fields at today's technological frontier. In engineering education, too, the nostalgic images of a simpler past are fading away.

M.I.T. has pioneered in making creative research a part of the engineer's education. It is now becoming apparent that graduate research in many of today's crucial problems requires the resources of research centers larger than M.I.T.'s laboratories in Cambridge. In radar and in space surveillance, in radio physics and astronomy, in information processing and in communications, major physical facilities are available at Lincoln Laboratory. There is a growing recognition among educators that these facilities are not regrettable manifestations of mid-century complexity, but are the environment in which tomorrow's scientists and engineers must learn to live and work. For example, one M.I.T. graduate student is currently investigating resonant modes of the earth-ionosphere cavity, using some of the Laboratory's extremely low-frequency radio-wave facilities. Another is studying solubility ranges in iron-vanadium alloys, using high-pressure equipment in Lincoln's Solid State Division.

Many years ago, a distinguished Dean of Engineering at M.I.T., C. Richard Soderberg, '20, pointed the way when he said: "Technological education, in particular, cannot prosper in sterile academic forms. It must feed on life itself, and anything which is significant in the technological activity of our society is worthy of serious study and the most imaginative application of scientific rigor."†

Mid-Career Programs

The environment of the research center may assume an even greater importance in a segment of engineering education that is still in the future. I believe the time will come when the education of scientists and engineers by an institution like M.I.T. will no longer be administered in a single massive and definitive dose before they enter upon their professional careers. At today's technological pace, the technical man who, 15 years after he has left school, does not wish to relinquish to younger men the essential technical core of his professional activities will have to come back for more education. The M.I.T. Special Summer Programs are an early form of such continuing professional education but the mid-career programs that I expect to be ultimately developed for scientists and engineers will

† Technology Review, June, 1953, page 432.



This complexity manifests itself in large team efforts . . .

be much more substantial than one- or two-week booster shots on special topics. My only point in parenthetically introducing this distant subject is to stress the suitability of the university-operated research center as an environment for such future mid-career programs.

The "Seaborg Report"

The view that has been taken here on the value of close interaction between research centers and universities is most eloquently put forward in a recent statement by the President's Science Advisory Committee.‡ One of the Committee's specific conclusions is that "new research laboratories for special fields should be attached to universities whenever it is practicable, and universities should make full educational use of such facilities." The Committee points to the danger of isolating the research center from the university: "When that happens the university loses the opportunity for a great enrichment of its graduate education, and the laboratory loses the stimulus and the support of the university's scientific staff."

Other Functions, Other Teams

In coming to grips with the technological realities of the space age, the federal government's needs are not limited to research and development. After results have started to flow from the laboratories into manufacture and into operational use, new tasks emerge in systems management and in general technical support to the user. Almost invariably, the principal reservoir of the necessary technical skills is the research center. Under present conditions, direct government employment does not include the required people in sufficient numbers, and it is inevitable that the research center is called upon to perform some of the management-support functions that are associated with the later stages of research and development.

But here the research center is in danger of becoming involved in activities that are no longer appropriate to a university. When the university leaves the world of research and development, in which the governing force is creative thought, and exposes itself to the pressures of industrial competition and political compromise, then it begins to lose sight of its real functions and of its important traditions. At that stage it must divorce itself from the continuing pursuit of even its most cherished research projects and hand over the reins to other organizations.

At Lincoln Laboratory, a transfer of this sort was accomplished in 1958 when the Laboratory disengaged from the continuing responsibilities associated with its first major project, the SAGE system of continental air defense. Much of the work of improving the original system and of adapting it to new weapons had already been transferred to industry. In addition, the MITRE Corporation was established in 1958 as a nonprofit organization independent of M.I.T. to provide technical support to the government in systems engineering and systems management. An earlier precedent was the creation of the Sandia Corporation to engage in activities that extended beyond the proper domain of the university-operated Los Alamos Scientific Laboratory.

The Future of Lincoln Laboratory

For an institution of the rank to which Lincoln Laboratory aspires, 10 years is a young age. Yet we have come to regard it as a stable permanent organization with an assured future. Is this a realistic view?

Clearly, the world and the nation will not run out of urgent problems that will challenge the imagination of scientists and engineers. Time and again, new ideas toward the solution of major national problems will be generated by bright young people in university environments, ideas that will demand speedy exploitation with the full resources of large research centers.

In defense technology there are no weapons systems that confer an absolute and permanent advantage to one nation. In the continuing competition for transient superiority the most important asset is strength and agility in research and development. And if we succeed in diverting our competition with communism into nonmilitary pursuits we shall encounter different but no less challenging problems for scientists and engineers.

Therefore, the crucial factors in the future of Lincoln Laboratory are the quality and the versatility of the technical staff. An initial reputation has been achieved for dealing effectively with a major national problem: Defense against air attack. A successful transition has been made to new and different tasks in ballistic missile defense and other fields. To provide a common foundation to these projects, the Laboratory is engaged in the continuous pursuit of research in advanced electronics and has gained wide recognition in this field.

If Lincoln Laboratory as it grows older succeeds in keeping a staff capable of the performance demonstrated in its first 10 years, we can be confident of the future of the organization. And a key to continued vitality and excellence in the staff is the closeness of the Laboratory's interaction with M.I.T. *Without* that, the Laboratory would face a mediocre and uncertain future, cut off from a major source of stimulation and guidance. *With* that interaction, there will always be new ideas and young men to match tomorrow's challenges, and Lincoln Laboratory will go forward with M.I.T. as a useful and respected member of that great community.

‡ Scientific Progress, the Universities, and the Federal Government. Statement by the President's Science Advisory Committee. (Washington, D.C.: The White House, Nov. 15, 1960.)

Books

TOTAL QUALITY CONTROL, by A. V. Feigenbaum, '48; McGraw-Hill Book Company ($11). *Reviewed by J. M. Osborne, Manager, Engineering Projects, Radio Corporation of America, and Sloan Fellow in Executive Development at M.I.T.*

RELIABILITY and "quality control" are probably among the most overworked words in the industrial vocabulary. But, strangely enough, both concepts probably are among the least understood and most maligned concepts in the technical community. Although there is a bewildering amount of material in the field, relatively little has been done to date to consolidate the more essential subject matter into a total concept. It is refreshing, therefore, to review a book which takes the place of a file cabinet of assorted pamphlets, articles, and books, and which presents the field in a lucid manner, readily understandable by anyone genuinely interested in the subject.

The author introduces his book thus: *"Total Quality Control* is directed to those men and women in industry who are responsible for the successful operation of a business or some part of it. Those persons may be termed manager, superintendent, engineer, quality-control engineer, reliability engineer, or development and design engineer." He defines Total Quality Control as "an effective system for integrating the quality-development, quality-maintenance, and quality-improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels which allow for full customer satisfaction." What follows is a discussion some 600 pages long which both covers how to sell quality-control to an organization and gives a detailed blueprint of "how to do it." It would be difficult to list any area which has not been covered—Dr. Feigenbaum has something for everybody.

The book is divided into 19 chapters which are then consolidated into six parts. Each part is written so that it can be used as a unit in itself.

Part 1, *Business Quality Management,* is a selling job. It provides a review of the field of quality control, establishes the need for an effective quality program, and describes some of the benefits to be expected.

Part 2, *Quality Control Management,* presents the organizational and administrative problems associated with the establishment of a quality-control organization. This part should be quite useful to anyone planning such an organization. Typical organization diagrams and job descriptions of key personnel are presented.

Part 3, *Engineering Technology of Quality Control,* discusses the technological competence required in three broad areas: Quality Control Engineering, Process Control Engineering, and Quality Information Equipment Engineering. Applicable techniques are developed and discussed.

Part 4, *Statistical Technology of Quality Control,* describes some of the various statistical methods and techniques applicable in the field of quality control. This part, which is some 200 pages long, presents the more usual methods, charts, forms, etc., at such a level that the subject matter can be readily grasped; it has *not* been written for the professional statistician, and does not claim to be exhaustive in what has been treated. Reference material has been included for those who wish to pursue the matter at a more sophisticated level.

Part 5, *Applying Total Quality Control in the Company,* discusses the various applications of quality-control methods to company problems. The areas covered are: new design control, incoming material control, product control, and special process studies.

Part 6, *Quality Control Education and Training,* discusses some of the problems an organization faces in obtaining general acceptance of the quality program, and describes a training program designed to further acceptance of the program.

This book is a most ambitious undertaking: it attempts to cover the entire field of quality control in an almost encyclopedic manner. Throughout the entire work the author assumes a mathematical knowledge of the reader no greater than simple algebra. In view of this formidable task, Dr. Feigenbaum has done a good job. Although the book is wordy in parts, it is by far the best general work in the field of quality control that I have seen and could only have been written by a person with an expert grasp of the subject matter.

Dr. Feigenbaum is to be commended, in the opinion of this reviewer, for this contribution to such an important subject.

Commemorative Volume Dedicated to Professor Draper Is Announced

A COMMEMORATIVE BOOK of technical papers, to be dedicated to Professor Charles Stark Draper, '26, will be published this year by the McGraw-Hill Book Company. Entitled *Air, Space and Instruments—The Draper Anniversary Volume,* it will be edited by Sidney Lees, '48, of Lees Instrument Research, Inc., in Cambridge; and contributors will include Julius A. Stratton, '23; Major General Leighton I. Davis, '41, Commander of the Atlantic Missile Test Range at Cape Canaveral, Fla.; Robert C. Seamans, Jr., '42, Associate Administrator of the National Aeronautics and Space Administration; and other colleagues of Dr. Draper.

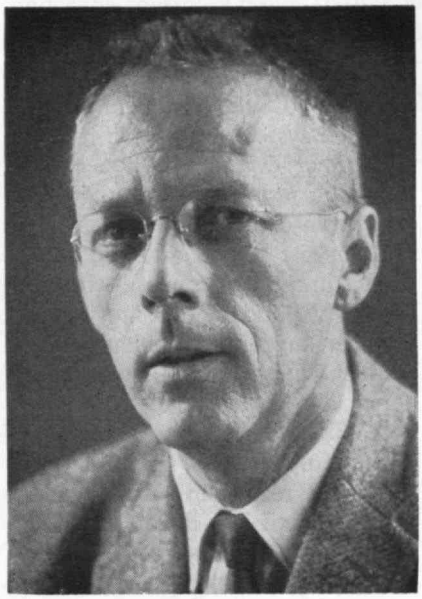
The book is to include 33 scientific and engineering papers by 43 authors on topics ranging from relativity to the analysis of combustion as it occurs in forest fires. In its preface, Dr. Lees acclaims Dr. Draper for having "taught a new generation of engineers to think about engineering in a new way."

Plans for the book were disclosed at a surprise dinner at the Algonquin Club in Boston for Dr. Draper on his 60th birthday. Brigadier General Benjamin S. Kelsey, '28, USAF Ret., was master of ceremonies at this dinner; Robert L. Halfman, '44, was a member of the committee responsible, and many Alumni attended.

Management Science: Its Impact

Rigorous training will be required to design and control industrial systems in the future

BY JAY W. FORRESTER, '45
Professor of Industrial Management



THIS ARTICLE is an excerpt from the introduction to Industrial Dynamics *(published in November by the M.I.T. Press and John Wiley & Sons, $18). Professor Forrester turned to research in industrial management five years ago after extensive experience as an electrical engineer. His book will be much discussed by organization men, their employers, and their wives, as well as by scholars and the developers of management science.*

THE manager's task is far more difficult and challenging than the normal tasks of the mathematician, the physicist, or the engineer. In management, many more significant factors must be taken into account. The interrelationships of the factors are more complex. The systems are of greater scope. The nonlinear relationships that control the course of events are more significant. Change is more the essence of the manager's environment.

In the past the arts, the sciences, and the traditional professions have been placed on an intellectual pedestal with a status above the study and practice of management. The illusion that the study of management lacked intellectual challenge has arisen, not because the field of management is wanting in unexplored frontiers, but because the intellectual opportunities were not recognized and the problems lay beyond the reach of traditional analysis methods.

Our most challenging intellectual frontier of the next three decades probably lies in the dynamics of social organizations, ranging from growth of the small corporation to development of national economics. As organizations grow more complex, the need for skilled leadership becomes greater. Labor turmoil, bankruptcy, inflation, economic collapse, political unrest, revolution, and war testify that we are not yet expert enough in the design and management of social systems.

Management is in transition from an art, based only on experience, to a profession, based on an underlying structure of principles and science.

Any worth-while human endeavor emerges first as an art. We succeed before we understand why. The practice of medicine or of engineering began as an empirical art representing only the exercise of judgment based on experience. The development of the underlying sciences was motivated by the need to understand better the foundation on which the art rested.

Over the centuries, management as an art has progressed by the acquisition and recording of human experience. But as long as there is no orderly underlying scientific base, the experiences remain as special cases. The lessons are poorly transferrable either in time or in space.

Today's Management Science

The search for a scientific base underlying management goes back at least to the beginning of this century. It has progressed through work simplification and statistical quality control. It has expanded into the "operations research" activities which followed World War II. With few exceptions, the attempts toward a management science have dealt with isolated situations at the bottom of the management structure.

Management science has not reached a level that is effective as a supplement to the skillful practice of top management as an art. Partly it is because management science has only begun to deal with the time dimension in business—the changes and evolution with time that are the manager's principal concern.

But primarily, management science has failed to assist top management because the philosophy and objectives of management science have often been irrelevant to the manager. Mathematical economics and management science have often been more closely allied to formal mathematics than to economics and management. The difference in viewpoint is evident if one compares the business literature with publications on management science, or descriptive economics books with texts on mathematical economics. In many professional journal articles the attitude is that of an exercise in formal logic rather than that of a search for useful solution of real problems. In such an article, assumptions having doubtful validity are stated in an introductory paragraph and adopted with-

out justification. On this formal but unrealistic foundation is then constructed an analytic mathematical solution for the behavior of the assumed system.

Another evidence of the bias of much of today's management science toward the mathematical rather than the managerial motivation is seen in a preoccupation with "optimum" solutions. For most of the great management problems, mathematical methods fall far short of being able to find the "best" solution. The misleading objective of trying only for an optimum solution often results in simplifying the problem until it is devoid of practical interest.

If the lack of acceptance of management science by management is to change, management science must change. It must attack the major problems of corporations and countries. It must accept the world as it is, not as an idealized abstraction that fails to be meaningful. It must search for improvement, not hold out for the optimum and perfection. It must use the information that is available, all that is pertinent, but, like the manager, it cannot wait for measurement of everything that one might like to know. It must be willing to deal with "intangibles" where these are important. It must speak in the language of the practicing manager.

The Precedent of Engineering

The separation between management and management science is now closing. Management research is being realigned to coincide with the objectives of practicing managers. The trends that are shaping for the future appear to have a precedent in the recent history of engineering.

Over the last 20 years, technology has held the spotlight in the center of the world stage, just as management and economics will during the remainder of this century. Furthermore, the fundamental reasons for great advances in management will be essentially the same as those that have thrust science and engineering to a dominant international position.

Before World War II, basic scientific developments in the world's universities lacked close ties to the practice of engineering. There was no strong applied science intermediate between basic information and its practical application. Industrial research laboratories were the exception rather than the rule. In the same way we now see a developing body of applicable basic science that has not yet found its way into the practice of management.

After 1940, the practice of engineering began to converge with the underlying science. Engineering advancement was founded more closely on mathematics, physics, and chemistry. The methods, instruments, and attitudes of research were no longer foreign to the practical fields of application. Research came to be recognized as an essential part of the technological process. Likewise, managers are now beginning to recognize the importance of an applied science foundation underlying the practice of management.

I believe that developments are now beginning in the theory of industrial organizations that will bear the same relationship to management that physics does to engineering. Both the strengths and weaknesses of this statement are intended. Physics has provided the foundation for a great upsurge in technology. But it is not adequate to specify the "best" design of a space vehicle nor to guarantee our ability to make a roof that does not leak. Physics is a foundation of principle to explain underlying phenomena but not a substitute for invention, perception, and skill in applying the principles.

Organization for Research

Twenty years ago the concept of how to organize for scientific research began to change. Before that, research was most often a one-man activity. Now team research is recognized as essential if resources are to match the tasks adequately.

Until recently research in the social sciences has been largely at the individual level in the form of doctoral theses and university faculty research. (We can scarcely count as research the large group efforts devoted to the collection of statistical data. These have provided information useful to the practice of management as an art, but gathering data is not the creation of an underlying science.)

The attitude toward management research is now changing, and we already see corporations beginning to assign groups for research into the underlying fundamentals of management policies and decisions. Just as we now expect a percentage of the sales dollar to go to product research, so we may come to expect in the future that a certain fraction of the management and white-collar payroll should be devoted to research toward managerial innovation.

System Awareness

Over the last two decades, engineering has developed an articulate recognition of the importance of *systems engineering*. Systems engineering is a formal awareness of the interactions between the parts of a system. A telephone system is not merely wire, amplifiers, relays, and telephone sets to be considered separately. The interconnections, the compatibility, the effect of one upon the other, the objectives of the whole, the relationship of the system to the users, and the economic feasibility must receive even more attention than the parts, if the final result is to be successful.

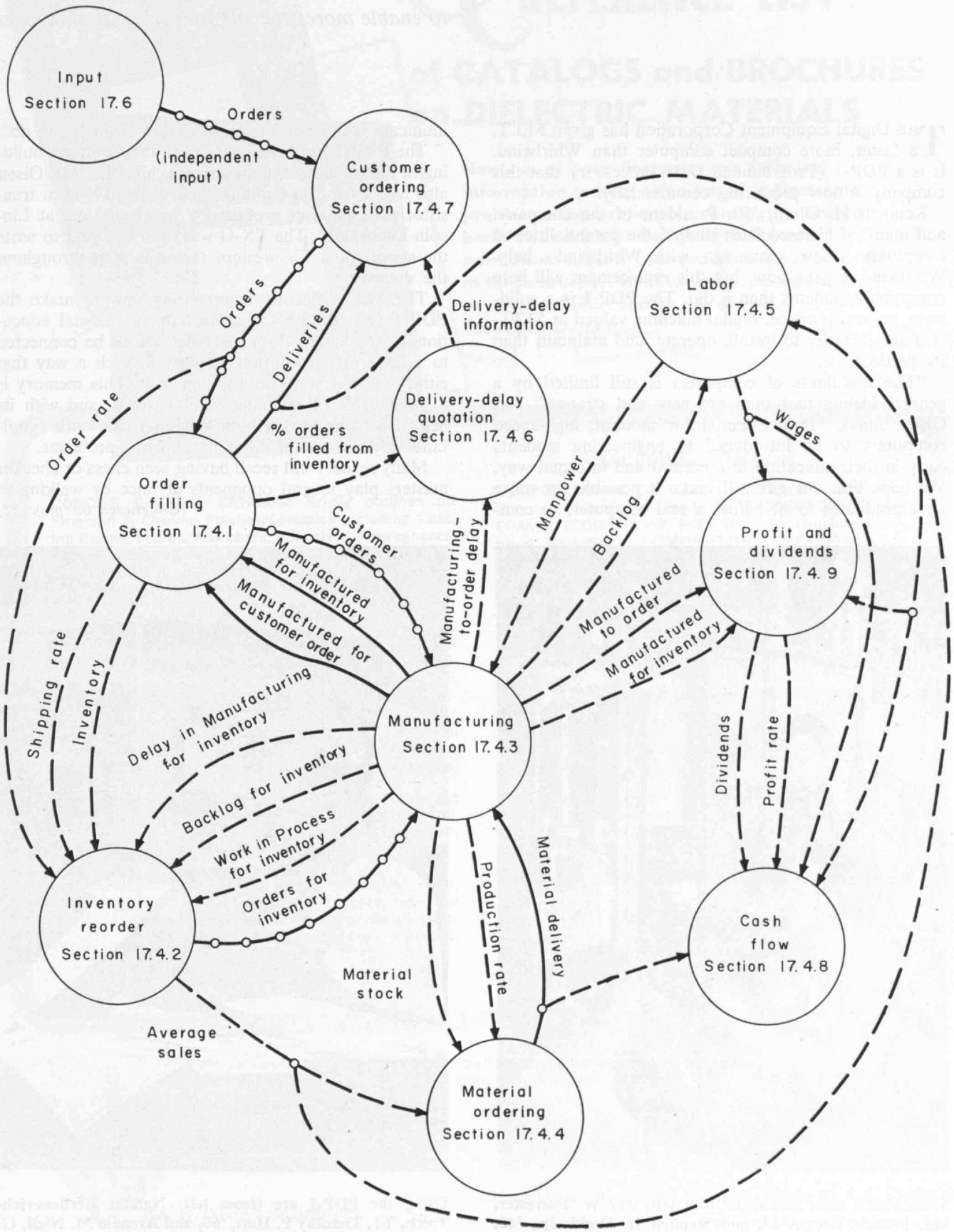
Until now much of management education and practice has dealt only with components. Accounting, production, marketing, finance, human relations, and economics have been taught and practiced as if they were separate, unrelated subjects. Only in the topmost managerial positions do managers need to integrate the separate functions. Our industrial systems are becoming so large and complex that a knowledge of the parts taken separately is not sufficient. In management as in engineering, we can expect that the interconnections and interactions

The construction and use of a model, the importance of feedback, and equations describing a system are discussed in Professor Forrester's "Industrial Dynamics." By using a digital computer as a tool, the author suggests, as many as 2,000 variables can be studied. The drawing on the next page shows subdivisions of a model that is described in the book. Section numbers in the subdivisions refer to the parts of Professor Forrester's book in which these matters are considered.

between the components of the system will often be more important than the separate components themselves.

The challenge to the future manager is to design improved enterprises. To do this he must devote himself more to the major decisions of strategy and less to the routine decisions and short-term tactics. He must relieve himself of the minor repetitive decisions by putting them under the control of policy so that he is free to push back the management frontiers. This will occur as an acceleration of trends that are already quite evident.

(Continued on page 36)



A PDP-1 Plays Whirlwind's Role

Compact new computer is given to the Institute to enable more students to work with machines

THE Digital Equipment Corporation has given M.I.T. a faster, more compact computer than Whirlwind. It is a PDP-1 (Programmed Data Processor) that this company is now producing commercially.

Kenneth H. Olsen, '50, President of the company, and many of his associates studied the potentialities of computers a few years ago with Whirlwind's help. Whirlwind is gone now, but this replacement will help many more students than it did. The PDP-1 is a solid-state, general purpose, digital machine valued at $120,000 and is easier to install, operate, and maintain than its predecessor.

"The usefulness of computers is still limited by a general feeling that they are new and strange," Mr. Olsen thinks. "It is essential for modern, high-speed computers to be introduced to engineering students early in their education in a natural and informal way. We hope that our gift will make it possible for more undergraduates to sit before a real computer, to communicate with it, and to learn exactly what it can do."

The PDP-1 has been installed in the Compton building in the room next to another machine that Mr. Olsen also had a hand in building. This is the TX-O, a transistorized computer produced a few years ago at Lincoln Laboratory. The TX-O was used last year to write the script for a TV western that was seen throughout the country.

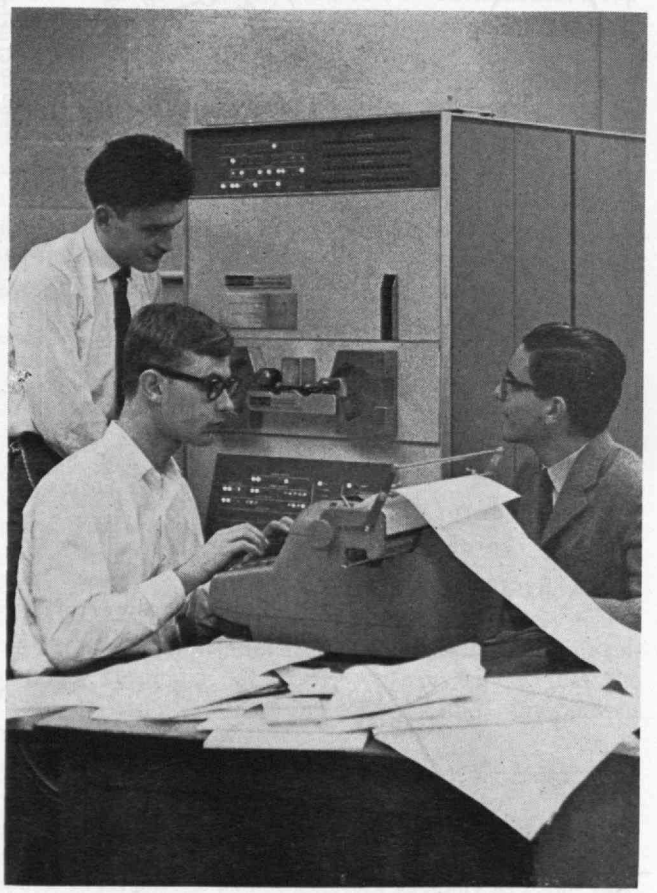
The M.I.T. Faculty is preparing now to make the PDP-1 and the TX-O partners in an unusual educational experiment. Both machines are to be connected to a large magnetic drum memory in such a way that either one can store information in it. This memory is to be capable of retaining 80,000 words, and with its help it is believed that both machines can work simultaneously on several different students' problems.

Many readers will recall having seen chess or checker masters play several opponents at once by walking to

(Concluded on page 32)



Whirlwind's users included (from left) Jay W. Forrester, '45, Patrick Youtz, '49, and Stephen H. Dodd, Jr., '42.

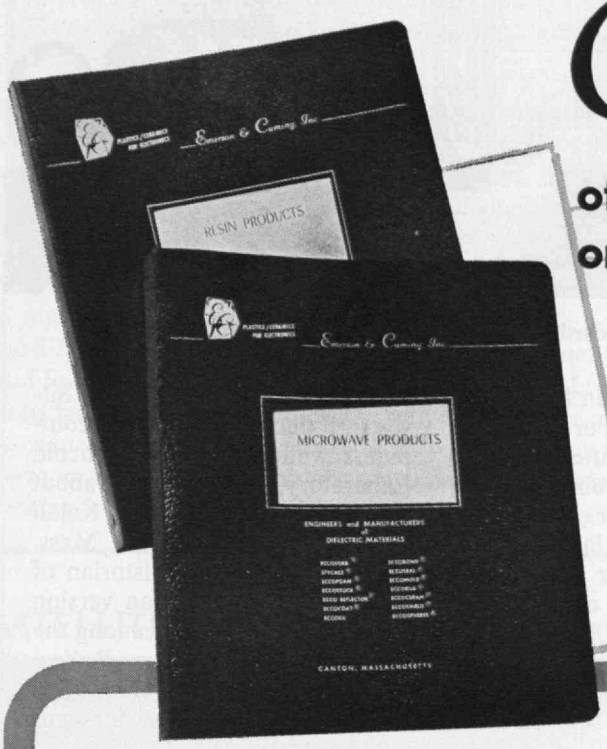


Using the PDP-1 are (from left) Natalio Kerllenevich-Taich, '61, Timothy P. Hart, '60, and Arcadio M. Niell, G.

Tear off this page . . . it's your

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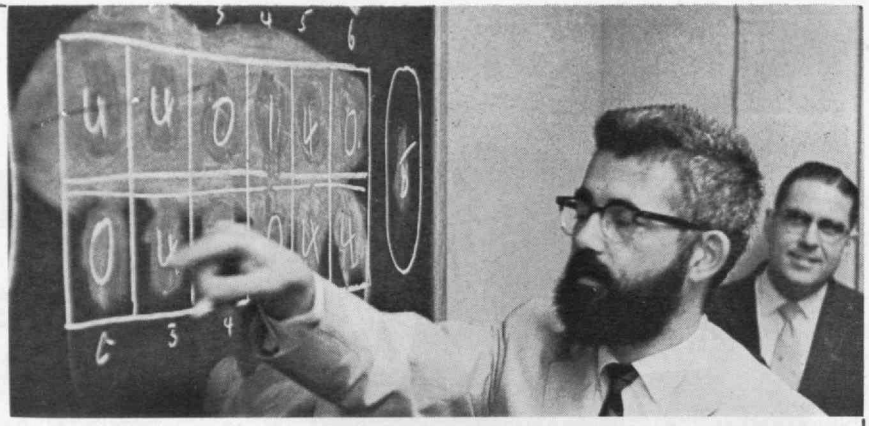
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You, Too, Can Play Mancala



Professor McCarthy recording a computer's mancala plays.

MANCALA, the game the PDP-1 plays at M.I.T., is popular throughout Africa and was first brought to this country by slaves.

It is a two-person game. Players take turns, and generally use a board having two parallel rows of six holes. Each player starts with six counters, say, in each hole on his side of the board, and the object is to move as many of them as possible into a scoring bin at the player's right.

The first player picks up all of the counters in any hole on his side and sows them toward the right, placing one in each hole. If his last counter lands in his scoring bin, he gets another turn. If he has counters left after he has put one in the scoring bin he sows them from right to left on his opponent's side. If the last one of the counters a player is sowing falls in an empty hole on his own side, he captures all of his opponent's counters in the hole opposite to it. The game ends when all six holes on one side of the board are empty.

Alan L. Tritter and Roland Silver introduced the game to computers while working at Lincoln Laboratory, after learning about it from a researcher for the Kalah Game Co., of Holbrook, Mass. R. C. Bell, a British historian of games, ranks an African version of mancala called wari among the world's nine best games. Professor McCarthy is conducting a mancala tournament now for computer programmers.

A PDP-1 Plays Whirlwind's Role

(Concluded from page 30)

and fro along a line of boards. The machines are expected to shift their attention from problem to problem similarly.

Eight electric typewriters are scheduled to be connected to the PDP-1, the faster of the two machines, and four to the TX-O. Each of 12 students seeking help with a problem then can be assigned one of these typewriters for his use in communicating with a machine.

When a computer has done the work requested by Charley Smith, say, it will be able to dump its data regarding his problem into the magnetic drum memory, and draw out of that memory the information needed to proceed with some other student's problem. The PDP-1 will be able to clear its memory of one batch of information and refill it with another from the drum in 30 milliseconds. By thus stashing away and retrieving information as needed, it is believed, both machines can be used more effectively than if limited to the capacities of their separate memories.

Jack B. Dennis, '53, Assistant Professor of Electrical Engineering, who is in charge of the TX-O will also direct the operation of the PDP-1, and it will be used for work on problems similar to those with which the TX-O has been helpful. These include speech analysis, the study of bio-electrical signals, and the simulation of automata.

Machines already have been used experimentally as aids in teaching foreign languages, mathematical formulae, and other subjects, and it is hoped that with the PDP-1 and the TX-O working together the technique can be extended to subjects of greater conceptual difficulty, such as symbolic logic and circuit theory.

Professor Peter Elias, '44, Head of the Department of Electrical Engineering, presided at the ceremonies in November when Mr. Olsen presented the PDP-1 to the Institute. Professor Jay W. Forrester, '45, spoke briefly of Mr. Olsen's work at the Institute and his company's achievements, and Provost Charles H. Townes accepted the machine for the Institute. Guests at the ceremonies included Mrs. Karl T. Compton, Dean Gordon S. Brown, '31, of the School of Engineering, and many others long associated with M.I.T.

To demonstrate the machine's operation, John McCarthy, Associate Professor of Communications Sciences, officiated while Professor Elias played a game of mancala with the PDP-1. The game was a draw. A similar contest attracted much attention to the PDP-1 at a recent computer show in New York.

Mancala is a game 3,000 or more years old. It is especially suitable for computers because fewer instructions are needed than in chess, and variations in strategy can make greater differences than in checkers.

The Digital Equipment Corporation which gave the machine to the Institute was formed four years ago by Mr. Olsen and Harlan E. Anderson, '53. It is a majority-owned affiliate of the American Research and Development Corporation of Boston. It now has about 150 employees in its plant in Maynard, Mass., and is producing digital logic packages and digital test systems as well as the PDP computers. Mr. Olsen is widely known as the inventor of a magnetic matric switch and received Eta Kappa Nu's "Outstanding Young Electrical Engineer" award in 1960.

Within the next few years a powerful astronomical observatory will be placed in orbit outside the distortion of the earth's atmosphere. The space observatory will look at interstellar matter, map the sky's ultraviolet light and perform other experiments to help scientists understand how stars and nebulae are born.

IBM is developing an advanced memory system to go aloft in this satellite and store its observations. The system will receive instructions from the ground, help aim the satellite's instruments and hold collected data for periodic radio transmission back to earth.

The new space memory, being developed by IBM for Grumman Aircraft Engineering Corporation and the Goddard Space Flight Center of the National Aeronautics and Space Administration, called for some unusual solutions from IBM engineers. For example, they were able to reduce power demands considerably by designing the memory to read out information over and over without writing it back into memory each time. Another significant accomplishment is the remarkable design reliability of the new system, achieved through new techniques of redundant circuitry.

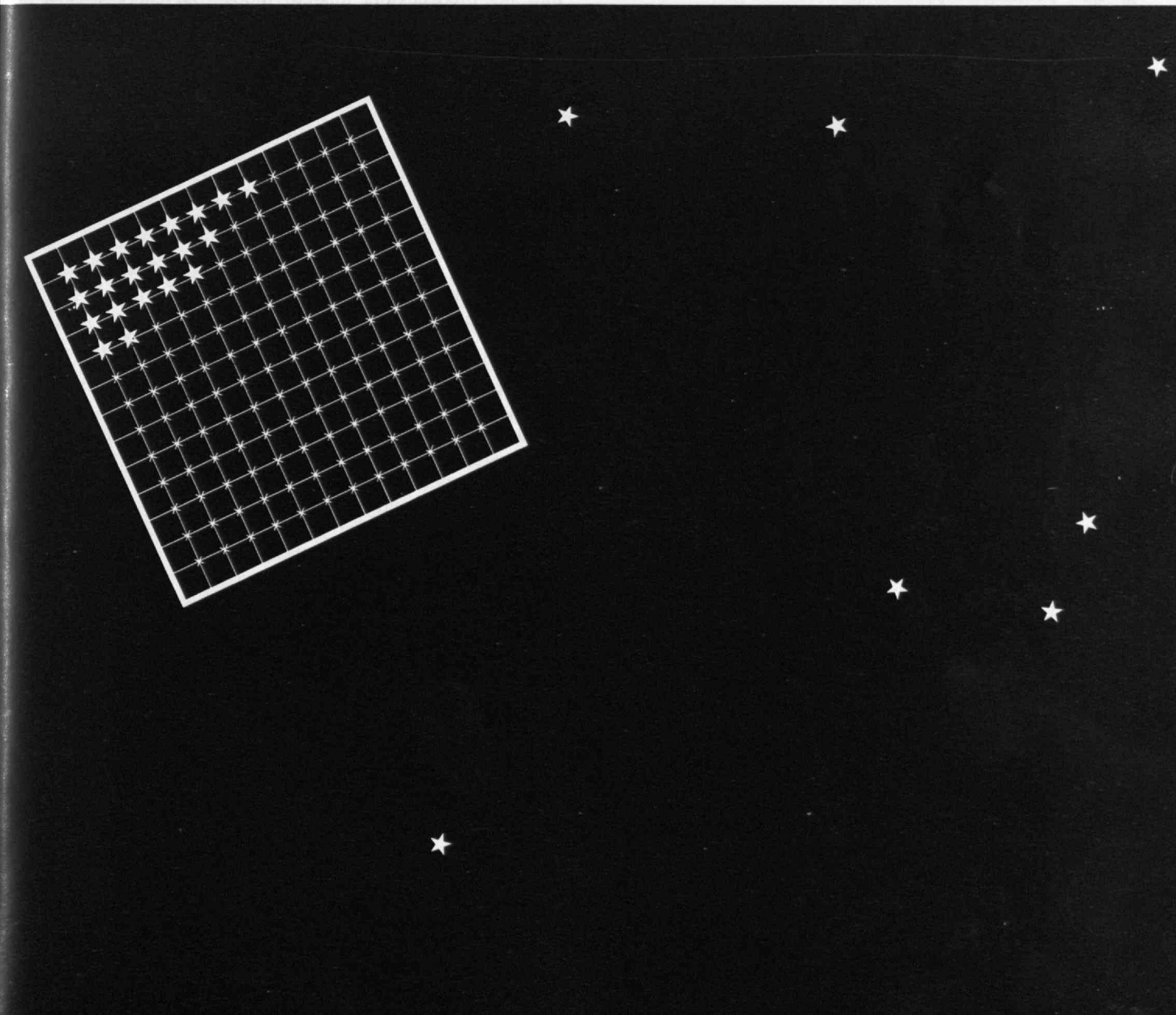
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25 Years Ago . . .

ANNOUNCEMENT was made in The Review for January, 1937, of preliminary tests of "a new magnet, a pygmy in comparison with others less powerful, [which] produces a field approximately 150,000 times stronger than the earth," by its designer, Dr. Francis Bitter of the Institute's Department of Mining and Metallurgy. The new magnet "was designed to produce fields of at least 100,000 gauss, the highest permanent field ever obtained, and in preliminary tests . . . a field of 75,000 gauss was produced.

"The stimuli for the present investigation in magnet design," continued The Review's account, "are of two kinds: First of all, it is desired to explore new regions quite without any possible prediction as to what lies in store. A magnetic field distorts or changes matter and, therefore, also its properties. With the new magnets it is now possible to produce greater changes than with the older models and at the same time vary the conditions of the experiment, such as temperature and pressure, and still have ample room and time for accurately observing the changes that take place. . . .

"The second stimulus is to make a generally useful laboratory tool and to fill specific needs in a variety of investigations already under way. For example, the very interesting range of temperatures below one degree absolute can be reached by means of a magnetic cooling cycle, and the new magnets will be well suited for such work. Dr. Bitter will collaborate with Dr. Frederick G. Keyes, Head of the Department of Chemistry, in a program of low-temperature research by means of the intense magnetic fields now available."

¶ On January 8, the Institute mourned the passing of Charles Hayden, '90, a member of the Corporation since 1913, who served as the 32d President of the Alumni Association in 1925-1926. Previously a benefactor of M.I.T. to the extent of more than $700,000, he bequeathed an additional $1,000,000.*

50 Years Ago . . .

IN JANUARY, 1912, James W. Rollins, '78, took office as the 19th President of the Alumni Association, with Leonard Metcalf, '92, as Vice-president. Walter Humphreys, '97, was re-elected for a sixth term as Secretary-Treasurer, in which portfolio he served the Association from 1907 to 1923.

The alumni term members nominated for the Corporation were: Eben S. Stevens, '68; Arthur D. Little, '85; and Louis A. Ferguson, '88.†

¶ On January 3, at the Hotel Somerset, came the 37th Annual Banquet of the Alumni Association, with an attendance of "more than 300 men . . . enlivened with songs and cheers," according to The Review.

"Conditions attending the banquet," continued The Review, "were vastly different from any of its predecessors. No longer any doubt existed as to the future of the Institute; it had secured funds sufficient to warrant the purchase of a new site and the building of a new home, and had established a policy in which Corporation, Faculty, and Alumni are in perfect accord. . . ."

And, as one speaker waxing lyrical proclaimed: "One cannot walk over the new site, less by only two acres than the area of Boston Common, with a water front along which the whole student body may stand in a single line to watch the boat races, without seeing visions and dreaming dreams—dreams of Grecian façades (or of Gothic towers, perhaps), of a noble Walker Memorial, of a swimming tank and gymnasium and dormitories. One dreams of a student life as far ahead of the present fine and manly and pleasant student life as that in itself has gone beyond the all-work-and-no-play which for some seems the dominant note of an earlier day. The student of the New Technology will catch from his surroundings a largeness and beauty that his predecessors missed, though he can scarcely feel for her a love stronger than ours for our sterner parent."

¶ On the evening of January 27, 1912, at dinner meetings held simultaneously in Atlanta, Ga., and Birmingham, Ala., there were founded the "Atlanta M.I.T. Alumni Association" and the "Tech Association of Greater Birmingham," now known, respectively, as the Atlanta Alumni Association of the M.I.T. and the M.I.T. Club of Alabama.

63 Years Ago . . .

IN JANUARY, 1899, there was published Volume I, No. 1, of The Technology Review.

75 Years Ago . . .

A GROUP of 21 Alumni foregathered on January 9, 1887, at the Hotel Leland in Chicago to discuss the formation of a local alumni club in that city; and the consensus being favorable, a committee of five was appointed to plan for formal action at a later meeting.

Thus, on February 12, also at the Leland, the North-Western Association of the M.I.T. was duly formed; and under its present title, the M.I.T. Club of Chicago, it now heads the roster of the current list of 94 recognized M.I.T. Clubs in this country and abroad.

The first officers of the new North-Western Association were: President, Frank Wells, '70; 1st Vice-president, Edward C. Potter, '80; 2d Vice-president, Henry Raeder, '76; Secretary-Treasurer, Solomon Sturges, '87. The first Executive Committee was composed of the above-named officers and Frederick Greeley, '76, chairman; Sydney T. Pope, '79; Thomas W. Fry, '85; Arthur H. Brown, '86; and John L. Shortall, '87.

¶ "Just about this time the Techs are unanimously engaged in a pursuit which may loosely be defined as a spasmodic attempt to make up for lost time," declared the editor of *The Tech*. "This time may have been lost

(Concluded on page 46)

* Later, gifts totaling $2,200,000 from the Hayden Foundation during 1945-1947 made possible the construction of the Institute's library, which bears his name.

† Later, Mr. Metcalf became the 27th President of the Association, in 1920-1921; and Dr. Little, who was elected a life member of the Corporation in 1918, became the 28th President of the Association in 1921-1922.

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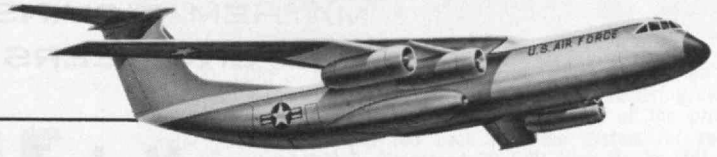
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Management Science

(Continued from page 29)

The manager will find a world commerce far different from the past. Newly industrialized countries will compete for markets. The world's raw materials will be more in demand.

We see already that the international struggle of the 1950's that was based on military technological competition is changing to a struggle to achieve economic strength and sufficient understanding of economic change to form a new basis for world leadership.

Closer to home, the corporation has a challenge to improve the effective use of its middle-management and technical personnel. In this group, from the 22-year-old college graduate to the vice-president, the average lifetime contribution is a small fraction of that which is potentially possible. Individuals are not developed to their fullest abilities, and existing abilities are not challenged to their greatest contribution. A bureaucracy has evolved in which the individual has become the "organization man"; and the essence of capitalism, with its competition and its objective basis for reward, has disappeared from the immediate environment of the individual.

As an estimate, I would put this middle-management lifetime effectiveness as low as a tenth of the maximum possible. We should not hope for the maximum; but certainly a manyfold increase in a 10 per cent effectiveness is possible before a point of diminishing returns is reached.

Our problems of international technological competition lie here in the ineffectiveness with which we use our human resources of scientists, engineers, and managers within the corporation—not in attempts to divert more of our students into technology.

Another future challenge to management is in the whole realm of long-range planning. Here we see much lip service but little real action. Plans, where they exist, are liable to be but wishes—goals of greater sales or higher profit without a plausible sequence of steps for achieving those goals.

Where long-range plans do exist,

(Concluded on page 38)

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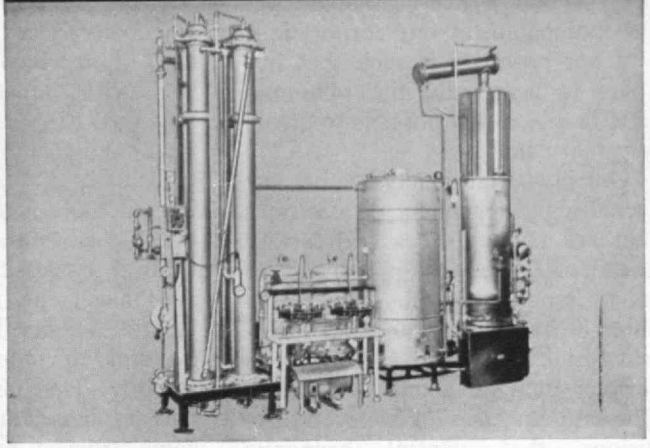
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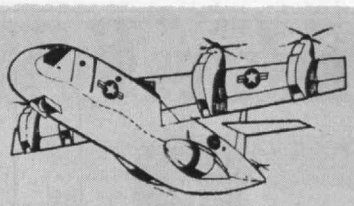
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Management Science

(Concluded from page 36)

they seldom have substantial content beyond a five-year span; yet the momentum of our corporations and our economy is such that five years is practically the minimum time in which it is possible to create any real changes.

Our industrial society has become increasingly dependent on decisions that are made further and further ahead of the period of their maximum impact; yet the social pressures on the individual have diminished the personal emphasis on serious thought about the future. The consequences of important decisions that control economic growth once lay inside the time horizon of the individual's personal planning; now the reverse is more typical.

This modern discrepancy between the distant consequences of required decisions and the brief tenure of men in the positions where the decisions are made unavoidably reduces responsibility and morale. The man is judged on results determined by his predecessors and makes decisions that will affect primarily his successors.

The Future Management Science

Managing is the task of *designing* and *controlling* an industrial system. Management science, if it is to be useful, must evolve effective methods to analyze the principal interactions among all the important components of a company and its external environment. It must be able to synthesize improved industrial systems.

Management now stands at a frontier leading to a new understanding of industrial growth and stability. This new insight into industrial and economic behavior will come from a better grasp of the time-varying interactions between the major facets of our social systems. Management education and practice are, I believe, on the verge of a major breakthrough in understanding how industrial company success depends on the interactions between the flows of information, orders, materials, money, personnel, and capital equipment. The way these six flow systems interlock to amplify one another and to cause change and fluctuation will form a basis for anticipating the effects of decisions, policies, organizational forms, and investment choices.

As a science emerges with the power and scope to deal with today's practical top-management problems, the gap between the science and today's management art will at first narrow. The science will develop more rapidly than it is accepted. As the science reaches maturity, it then becomes a basis for a further development of the art of management.

The task of the manager will become more challenging. His training will become more rigorous. The new professionalism will not bring automatic success. New tools used without proper understanding can lead to disaster. In the hands of those who use them correctly they become a new competitive advantage toward business success.

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Management science does not mean automatic management. It means a platform from which to reach further by the exercise of managerial intelligence and judgment.

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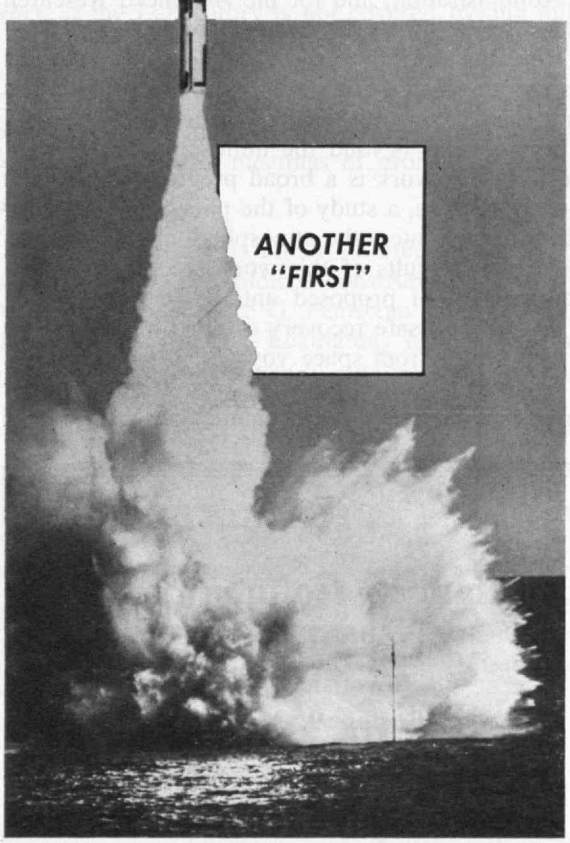
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Lincoln Laboratory's First Decade

(Continued from page 17)

physics research, and has been termed "one of the most important sources of satellite tracking information in the free world."

Now under construction on nearby Haystack Hill is a new radar, to be finished in early 1963, that will have a sensitivity more than 2500 times as great as that of the present Millstone system. This will be a powerful tool in satellite communications, space surveillance, and interplanetary radar astronomy. It is the only U.S. system presently planned that will be able to track a so-called "stationary" communications satellite in a 24-hour equatorial orbit more than 22,000 miles above the earth. It will extend our interplanetary radar contacts to Mars, Mercury, and Jupiter—as well as Venus.

Present and Future

Lincoln's ability to contribute effectively to the advancement of electronics technology is derived from a number of General Research Programs, concentrated in selected technical areas but not specifically directed to particular applications. These General Research Programs are consistently maintained at a level that is normally 40 to 50 per cent of our total Laboratory effort. They presently include work in seven areas: solid state, communications, systems research, radar, information processing, radio physics, and space surveillance techniques. These programs are jointly sponsored by all three Armed Services, and provide the Laboratory with the technical capability to undertake specific projects for individual sponsors.

At present Lincoln is engaged in specific projects for all three Services, for the National Aeronautics and Space Administration, and for the Advanced Research Projects Agency of the Department of Defense. Consistent with the original purpose of the Laboratory, its staff is still engaged in advancing national capabilities for air defense, currently against ballistic missiles and other threats from beyond the atmosphere.

Central to this work is a broad program of research in Re-entry Physics, a study of the phenomena that occur when a body enters the atmosphere at nearly meteoric velocities. Results of this work are basic both to the development of proposed antimissile systems and to the welfare and safe recovery of our own astronauts when they return from space voyages.

We are vitally concerned also with techniques for tracking space vehicles and communicating with the

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passengers, whether they be human or electronic. Closer to home, we are investigating systems for better world-wide communication, and systems for highly reliable and accurate data transmission that will make it practicable for networks of computers to converse with each other at reasonable cost and without the danger of serious misunderstandings.

Our radars are probing farther and more sharply into space, tracking five-inch-diameter targets at 200 miles range, mapping the surface of the moon (¼ million miles away), measuring the distance to Venus (nearly 30 million miles), and probing the restless corona of the sun (93 million miles). At the same time, our solid state physicists are probing the submicroscopic interior of electronic and magnetic materials that bear the equivocal titles of "semi-conductors," "semi-metals," and "intermetallic compounds," seeking elusive properties that may further advance the art of electronics.

The Laboratory Staff

This brief survey would be incomplete without a specific reference to our staff, which is clearly our most valuable resource, and to some of the special facilities that are at their disposal. We now have almost exactly 600 staff members, representing a wide variety of professional disciplines; electrical engineers and physicists predominate, but mechanical engineering, chemistry, psychology, metallurgy, mathematics, and other fields are well represented. More than 90 per cent of these men have at least a bachelor's degree, and one-quarter of the entire staff have earned doctorates. Forty per cent have had previous experience in industry, and almost 30 per cent have come from academic pursuits.

Despite the emphasis on Lincoln's role in the development of military systems and equipment, much of the work at the Laboratory is not covered by any military security classification. Indeed, a conservative estimate would place the proportion of classified work at about 20 per cent of our total effort. Thus, staff members may publish most of their work in established journals and participate freely in meetings of professional societies.

Physical Facilities

Lincoln Laboratory is about 12 miles from the Cambridge campus, in buildings constructed for us by the Air Force at Laurence G. Hanscom Field. The Laboratory moved to this Lexington, Mass., location in 1953-1954 from improvised quarters in Building 22 and rented space nearby. The main buildings now have

(Concluded on page 42)

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Control Systems Design Theory

Perform research in the modern theory of optimum control and its applications. Investigate various methods of implementing optimum and sub-optimum control algorithms or digital and analog computers. Requires good background in differential equations, appreciation of control problems, understanding of digital and analog computers, familiarization with current applicable literature.

For information, write or call direct to the following as applicable:

Dr. Steven Sussman, Head, Communications Theory Laboratory
Mr. Joseph Van Horn, Head, Computer Laboratory
Dr. Taffee Tanimoto, Head, Pattern Recognition Laboratory
Dr. Bernard Friedland, Control Systems Design Theory

Correspondence and phone inquiries will be held in strictest confidence.

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Lincoln Laboratory's First Decade

(Concluded from page 41)

a gross area of about 350,000 square feet, and a new building of 80,000 square feet is already partially occupied.

Equally important to the programs in radar, radio physics, and communications are major Lincoln field sites. The Millstone Hill radar in Westford, Mass., is one such site, and the Haystack Hill system is being installed nearby. Adjacent to these is one terminal of a transcontinental radio communications facility, developed for the Project WEST FORD experiment in orbital scatter communication; the other terminal of this facility is at Pleasanton, Calif., not far from San Francisco.

Near El Campo, Texas, Lincoln is conducting radar measurements of the sun's corona with a new Very High Frequency space radar completed early in 1961. At Arbuckle Neck, Va., near Wallops Island, we have a powerful array of radar and optical facilities for field measurements in re-entry physics, and we are now engaged in major instrumentation developments for similar measurements on ballistic missiles at Kwajalein Atoll in the central Pacific.

These are tools of the sort we need to tackle the challenging problems of the decade that lies ahead, if Lincoln Laboratory is to discharge its responsibilities to the nation in air defense and in the attainment of national space objectives.

An Ally of Our Senses

To OBSERVE its 10th anniversary, Lincoln Laboratory is presenting a series of lectures on "The Age of Electronics" at M.I.T. this winter. Professor H. B. G. Casimir, Director of the Philips Research Laboratories in Eindhoven, The Netherlands, opened this series in November by reviewing the work of Maxwell, Hertz, and Lorentz.

Dr. Casimir traced the long and difficult road by which a magnetic field has come to be viewed as a mathematical abstraction, and electricity, which was once the study of eccentric curiosities, has become a central discipline of physics.

The human mind, he said, can deal with abstractions as well as tangible things, and mathematics, by becoming a fundamental vehicle for our thinking about nature, "has almost become one of our senses."

Lincoln Laboratory, he observed in conclusion, has impressively shown "the fruitfulness of applying such abstract notions to concrete realizations."

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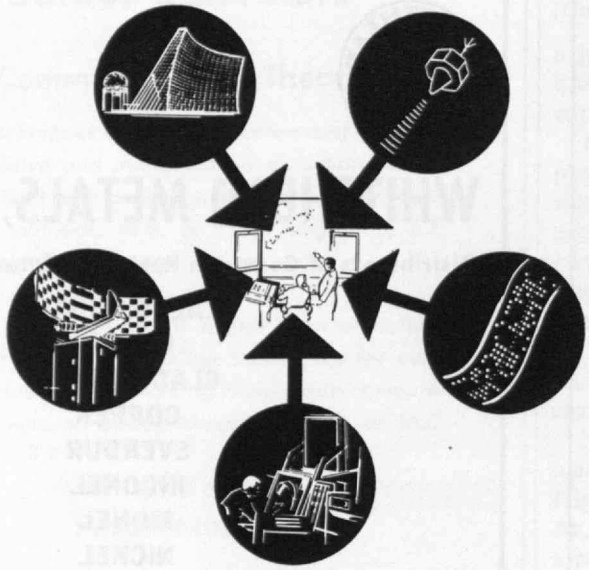
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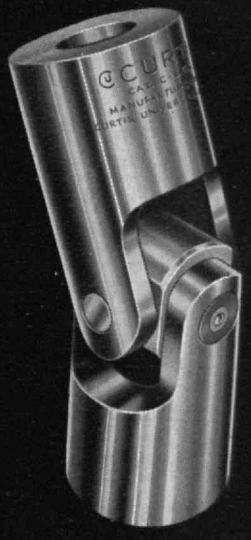
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(Concluded from page 34)

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FUTURE FEATURES *in The Technology Review will include an account by M. Bryce Leggett, '40, Associate Director of Admissions, of how many students now enter M.I.T. with Advanced Placement as a result of college-level work which they have completed while in high school.*

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Club News

Puget Sound Club Observes National Alumni Night

The M.I.T. Club of Puget Sound in observance of National M.I.T. Alumni Night, October 19, held its first meeting of the season at the Boeing Scientific Research Laboratory. Following the national program, more than 100 Alumni and friends were privileged to hear our guest speaker of the evening—Professor R. L. Bisplinghoff, Deputy Head of the Aeronautics and Astronautics Department. Professor Bisplinghoff related some recent developments that have taken place in this dynamic field at M.I.T. Course XVI Alumni were naturally in evidence for this interesting and informative evening.—William J. Sullivan, Jr., '51, Secretary, 646 S.W. 145th Street, Seattle 66, Wash.

Bush-Brown Talks To Record Crowd At Denver

Our October 19 dinner meeting drew the largest attendance in the history of our club; 101 persons gathered on the 14th floor of the Petroleum Club for an evening of gaiety and enjoyment. We were fortunate to have Albert Bush-Brown, Associate Professor of Architectural History at M.I.T., as our guest speaker. His explanation of his interesting architectural pictures was "the hit of the evening" and made our party a memorable one. Joe Bowman, '41, and Charlie Brokaw, '22, encouraged all of us to give freely to the SCF with results to be tabulated later.—Benjamin A. Oxnard, '25, Secretary, Great Western Sugar Company, Box 5308, Terminal Annex, Denver 17, Colo.

Japanese Alumni Welcome Guests From New England

The M.I.T. Association of Japan was happy to welcome Professor and Mrs. Charles S. Draper, '26, to its meeting at the Japan Industry Club on October 25. Dr. Draper had a very heavy schedule, and yet we found him as pleasant and genial as we remember him over the past 30 years. We are sure that Dr. and Mrs. Draper will enjoy their trip to Kyoto and Nagoya.

Professor and Mrs. Samuel A. Goldblith, '40, were given a small party by Yoshinori Chatani, '22, just before their departure. On that particular day I was in Kyoto, but I was able to meet Dr. Goldblith when he spoke at the Japan Industry Club.

A third Alumnus to visit the Japan Industry Club was Saul M. Silverstein, '21, President of Rogers Corp., Rogers, Conn., who came in December.—Shikao Ikehara, '28, President, M.I.T. Association of Japan, Department of Mathematics, Tokyo Institute of Technology, Oh-Okayama, Meguro-Ku, Tokyo, Japan.

Detroit Hears Stever Discuss Space Flights

Special speaker at the Detroit Club meeting of National M.I.T. Alumni Night was H. Guyford Stever, the new head of the Department of Mechanical Engineering and the Department of Naval Architecture and Marine Engineering at M.I.T. His subject was "Is Space Flight Here to Stay?" Dr. Stever called attention to the matter-of-fact attitude of everyone listening to the voice of John J. Wilson, '29, General Chairman of the Second Century Fund, coming via the moon during the nationwide program and suggested that the voices for the Third Century might come directly from somewhere in outer space.

Before Dr. Stever's speech, almost 100 Alumni and guests met for cocktails and dinner at the Veterans Memorial Building in the new Detroit Civic Center. Jim Mast, '53, Vice-president of Programs, made the arrangements for the meeting and introduced Dr. Stever. Joe Mestier, '43, President of the club, introduced Bob Semple, '32, a director of the club and area chairman of the Second Century Fund. He reported that the area goal for the fund would be exceeded.

Other officers and directors of the club in attendance were Ernest Upton, '43, Vice-president-membership; John Prizer, '52, Secretary; Ed Schwartz, '52, Treasurer; and Patrick Colvan, '48, and Charles Ricker, '42, Directors of the club.

On November 15 the club toured the Wyandotte Chemical Research Facilities. At a round-table discussion which followed the tour, outstanding Alumni emphasized traits they look for when selecting men for bigger and better jobs.—Ella Paton Gardner, '55, Review Secretary, 1821 Villa, Birmingham, Mich.

Ervin Hoffart Addresses Long Island Club

On September 29 the M.I.T. Alumni Club of Long Island held the September Suds and Sauerkraut Evening at the Park Restaurant, Franklin Square, Long Island. Seventy Alumni and friends enjoyed hearing Ervin H. Hoffart, of the Physical Science Study Committee, Watertown, Mass., tell the story of the M.I.T. Secondary School Physics Program. He used laboratory equipment demonstrations and several filmed physics experiments to illustrate his talk. A number of Long Island high school principals and physics teachers attended to learn about the program.

Scheduled for Thursday, November 16, was a plant tour of Grumman Aircraft Corporation's OAO (Orbiting Astronautical Observatory) Program, with a discussion led by Walter Scott, Director of the Program. Event Chairman Duane Yorke, '54, planned the dinner at Grumman.

Meetings of the Alumni Club are also planned for January, March and May. Interested Long Island Alumni can obtain further information through the M.I.T. Club of New York or by contacting Myron A. Cantor, '39, President, 11 Sugar Tom's Road, East Norwich, L.I.—Theodore W. Henning, '46, Secretary, 24 Madison Park Gardens, Port Washington, L.I., N.Y.

Rhode Island Club Meets On M.I.T. Alumni Night

The M.I.T. Club of Rhode Island held a successful meeting on October 19 in conjunction with National M.I.T. Alumni Night. The phone hookup was excellent without any malfunction. For about two minutes we heard some cross talk on the line, but it was well below the true signal and did not interfere with the speaker.

Professor Roland B. Greeley, M.I.T.'s new Director of Admissions, made the trip to Providence—probably the closest non-Cambridge location he could have had as local speaker. I don't have any children in high school hoping to be admitted to Tech so I could relax and enjoy Professor Greeley's company.

Professor Greeley's prediction about the revival of urban centers is the type of news Providence people like to hear, and his comments were printed in the "Journal" the next day.

The club's nominating committee, under John B. Waller, '41, nominated and duly elected: William H. Barker, '32, President; Colin A. Roberts, '46, Vice-president; and S. Martin Billett, '48, Secretary-Treasurer. The new officers are optimistic about the remaining meetings of this year.

Immediately after the election of officers, the president appointed an executive committee: Donald G. Robbins, '07, John D. Eldert, '27, Arthur Campopiano, '28, Dr. Edgar J. Staff, '35, Kenneth M. Warren, '35, H. Bruce Leslie, '38, John B. Waller, '41, Roger M. Freeman, Jr., '44, Arthur N. Verrier, '46, and William L. Ahlborg, '51.

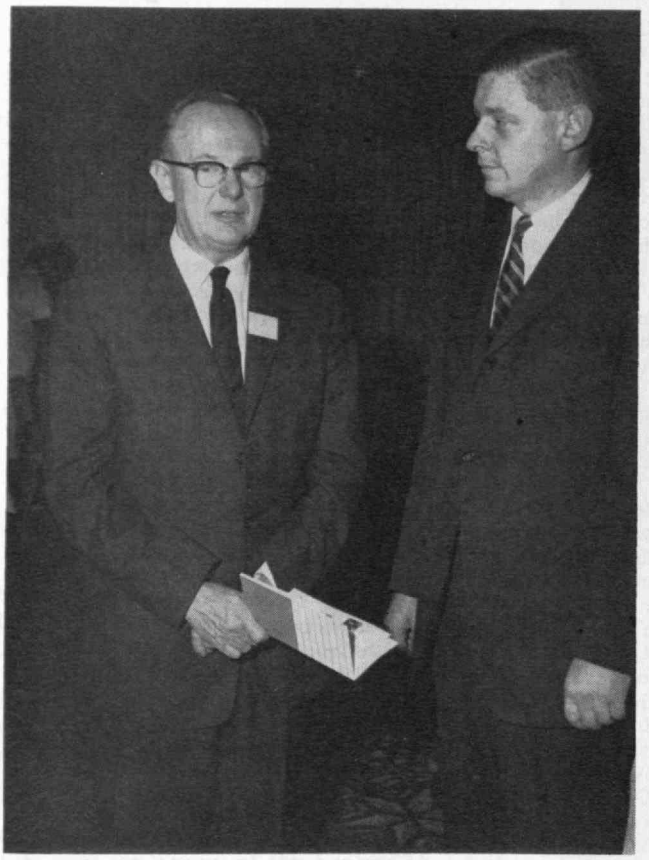
A partial list of Alumni and guests who attended the meeting follows: Walter C. Slade, '12, Lester N. Odams, '22, Miss Louise W. Dingwell, '30, Mr. and Mrs. Eli A. Grossman, '36, Mr. and Mrs. Herbert G. Graetz, '44, Mr. and Mrs. Richard C. Berry, '48, Mr. and Mrs. David A. Finnegan, '48, Sheldon L. Green, '48, Lachlan F. Blair, '49, William F. Heintz, '49, Jack Binns, '51, Mel Platte, '59, George Marcon, Chris Outra, and Mark B. Schopack.—S. Martin Billett, '48, Secretary-Treasurer, 16 Greenwood Avenue, Barrington, R.I.

Vincent Kling Discusses Modern Architecture

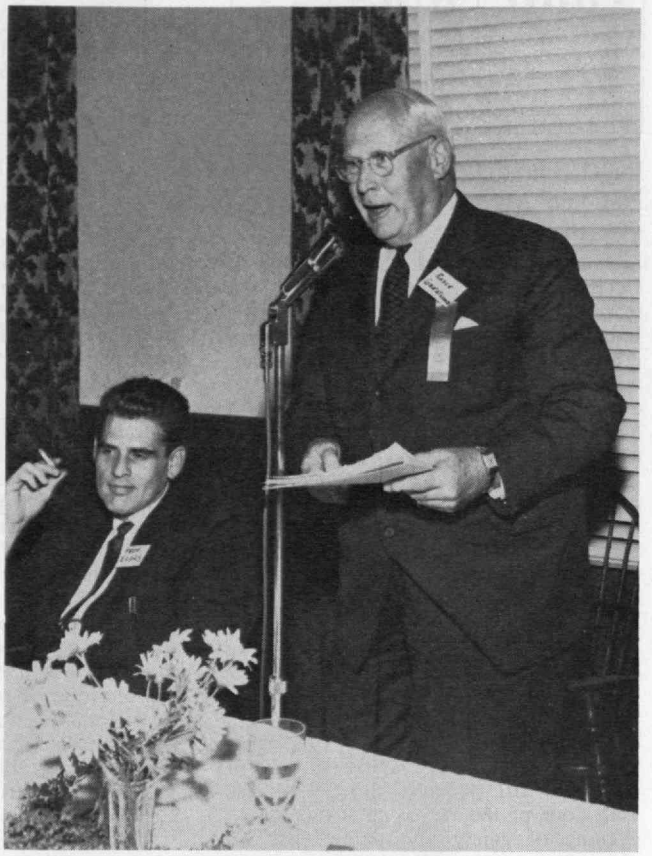
Members and guests of the M.I.T. Club of Delaware Valley enjoyed an unusual fall dinner meeting. The Egyptian Room of the University of Pennsylvania Museum was the exotic setting for the dinner. Before dinner, members toured the archaeological displays from Iran, Greece, Mesopotamia and Italy. In exhilarating contrast to the splendor of the ancient world was the discussion of modern architecture by the noted architect, Vincent G. Kling, '41. His talk, given with illustrations, dealt with efforts to incorporate humanism into modern building design. Everyone gained insight into the remarkable creativity of this gifted man.

Our next meeting will be on January 23, 1962, at the Barclay Hotel.—Thomas V. Griffiths, '57, Secretary, Spring Valley Drive, Media 27, Pa.

National Alumni Night Gatherings Hear M.I.T. Faculty Members Speak



IN WASHINGTON, Professor John G. Trump, '33 (left) spoke. With him is Lt. John G. Beebe-Center, Jr., '56.



IN SAN FRANCISCO, Professor Peter Elias, '24 (left) was honored and his hosts included W. Royce Greatwood, '24.



IN TULSA, the speaker was Roy Lamson, Professor of English at the Institute, and his Oklahoma hosts included (from left) James R. Cowles, '37, William R. Holway, '15, and William J. Sherry, '21, of the M.I.T. Corporation.







IN CHICAGO, the diners pictured above were among those who heard Dean E. P. Brooks, '17 (right, above) and Gregory Smith, '30, discuss the SCF work.

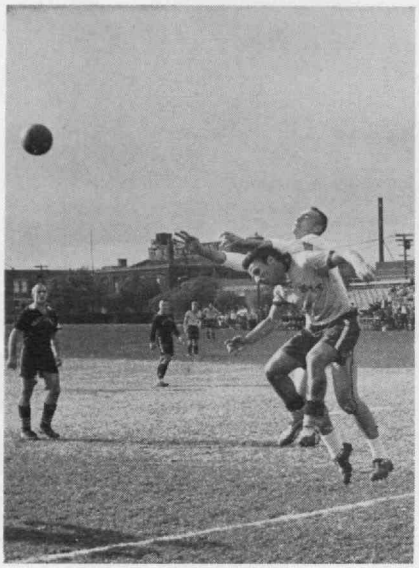


IN ROCHESTER, the gathering included (left to right) Charles F. Payne, '33, Fred Kolb, '38, Dean Pietro Belluschi of the School of Architecture and Planning at M.I.T., E. Philip Kron, '34, and Sheldon H. Smith, '31.

Tech's Varsity Soccer Players End Season With Seven Victories



Dirk Berghager, '62



An Army goalie foiled . . .



Robert Mehrabian, '64

THE M.I.T. varsity soccer team won seven games, lost two, and tied one last fall, and placed among the top four New England colleges. It was the first New England team to play at the new Air Force Academy campus in Colorado. Its stars included Dirk Berghager, '62, and Robert Mehrabian, '64.

New Hampshire Club Hears Wilson on Africa

The M.I.T. Club of New Hampshire held its annual meeting at the Nashua Country Club on Tuesday, November 7. Following a social hour, dinner was served in the main dining room to 77 members and guests.

The following officers were re-elected: President, Glenn D. Jackson, Jr., '27, of Amherst; Vice-president, M. Arnold Wight, '40, of Amherst; Secretary-Treasurer, Blaylock Atherton, '24, of Nashua; and Representative to the Alumni Council, Lawrence C. Hall, '35, of Amherst.

Carroll L. Wilson, '32, Professor of Industrial Management at M.I.T. and Vice-president of the M.I.T. Alumni Association, was present with his charming wife, and discussed "The Changing Face of Tropical Africa." He showed colored slides taken on several trips to that continent. The large audience was very interested in the fact that modern buildings were located within a short distance of grass huts and wild animals.

Professor Wilson said that a number of M.I.T. graduates were working in various sections of Africa and usually took a two-year tour of duty in their various stations.

In addition to Professor and Mrs. Wilson, Fred Lehmann, '51, Assistant Alumni Secretary was present, and among others attending were: Louis A. Arnold, '42, Blaylock Atherton, '24, Edward A. Beaupre, '41, Jason T. Bickford, '23, D. E. Brown, '51, Elmer R. Burling, '30, Charles H. Campbell, '28, F. Tenney Clough, '38, Philip N. Cristal, '17, Walter D. Davol, '06, Charles M. Dierksmier, '37, Father Leonard Glavin, '50, Russell B. Hawes, '49, Paul F. Hayner, '51, Louis B. Heaton, '38, Clarence G. Holt, '17, Vernon V. Hukee, '56, Glenn D. Jackson, Jr., '27, John H. Kellogg, Jr., '44, Thomas G. Kudzma, '56, Philip LaBombarde, '47, Thomas D. Landale, '54, Roger E. LeBlanc, '36, Julian Lovejoy, '22, John J. McAllister, '57, Roger G. Mosscrop, '20, E. Sterling Pratt, '26, Charles R. Prichard, '30, Neil F. Putnam, '34, Norman P. Randlett, '22, Maynard S. Renner, '42, John P. Rich, '29, Norman I. Sebell, '44, Thomas W. Stewart, '58, Davis P. Thurber, '48, Stuart Z. Uram, '56, Stanley H. Walters, '33, and M. Arnold Wight, '40.—Blaylock Atherton, '24, Secretary-Treasurer, 142 Main Street, Nashua, N. H.

Washington Club Plans February Dinner Meeting

The M.I.T. Club of Washington joined many other clubs throughout the country in the nationwide telephone program on October 19. We were pleased at the large attendance and thoroughly enjoyed the telephone program and our additional guest speaker. Professor John G. Trump, '33, gave the group a most interesting talk on "X-ray and Medicine." Professor Trump showed slides which illustrated the principles and achievements of the field of X-ray technology in the treatment of skin disease.

Plans are being made for the Christmas vacation luncheon on December 29, and the next dinner meeting to be held in February. Meetings have been very well attended, and we certainly hope that more Washington area Alumni will join us to renew acquaintances and meet new M.I.T. friends.—Gilbert H. Lewis, '51, Secretary, 9914 Grayson Avenue, Silver Spring, Md.

Charles Payne Heads Rochester Club

The fall activities of the M.I.T. Club of Rochester started pleasantly with the annual meeting at Mendon Park on Saturday, September 19. Charles F. Payne, '33, was elected president; H. Sheldon Smith, '31, president-elect; Evan A. Edwards, '37, vice-president; Donald W. Ramsey, '50, treasurer, and William A. Pitbladdo, '31, executive committeeman. John D. O'Brien, '51, was re-elected secretary and Gail Millard, '58, assistant secretary. The traditional softball game was followed by beer and steaks, and the committee headed by Gail Millard was given a vote of thanks.

Rochester's participation in M.I.T. Alumni day on October 19 took place at a dinner meeting at the Towne House Inn. It served as a victory celebration for the Second Century Fund drive since Rochester went well over its quota. Fred Kolb, '38, and Charles Payne received a big round of applause for the fine job they did in directing the drive. After the national telephone hookup, Dean Pietro Belluschi of the School of Architecture and Planning gave a most interesting talk on aspects of city planning. Phil Kron, '34, was responsible for the fine arrangements.

Educational counseling activities have been numerous lately. A dinner was given by Harry Essley, '36, for all the counselors on October 26. The following week Sanford A. Miller, Assistant Professor of Nutrition, came to Rochester and visited 12 of our high schools to discuss education in the fields of science and engineering. His visit was highlighted by a meeting at the University Club on November 2.—John D. O'Brien, '51, Secretary, 250 Chelmsford Road, Rochester 18, N. Y.

Sloan Fellows

Plans are well under way for the joint Convocation of Sloan Fellows and members of the M.I.T. Program for Senior Executives to be held at M.I.T. on May 3, 4, and 5, 1962. The theme selected for the convocation is "Management Decisions in a Changing World." The program of activities, which will be ready for distribution during January, begins with a reception for all participants and their wives on Thursday evening, May 3. Friday, in Kresge Auditorium, will be a full day of major papers examining the dimensions of changes confronting management in science, the world arena, ethical issues, economic development, and major social changes. There will be a dinner Friday evening for all the participants and their wives at which Alfred P. Sloan, Jr., '95, will be the principal speaker. Saturday, May 5, will bring a series of seminars led by members of the Faculty of the School of Industrial Management and the Department of Economics in which the implications of change for specific areas of business will be explored.

Sloan Fellows helping in the Planning Committee for the Convocation include **Wylie S. Robson,** '56, President of the Society of Sloan Fellows of M.I.T., **Roswell L. Derby,** '54, **William C. Mercer,** '56, and **Alan W. Sampson,** '59. Mrs. Derby, Mrs. Mercer, and Mrs. Sampson are planning the program for the wives.

A regional meeting of Sloan Fellows in the New York area was scheduled for December 13 in conjunction with the Sloan Fellow Class of '62 annual field visit to New York. Dean Howard W. Johnson was the speaker for this meeting. The Sloan Fellows' visit again concentrated on meetings with industrial and financial leaders in New York City and included a luncheon with Alfred P. Sloan, Jr.—**John M. Wynne,** '56, Secretary, Room 52-455A, M.I.T., Cambridge 39, Mass.

Happy Birthday

Congratulations are due in January for four Alumni due to celebrate 90th anniversaries; and to 6 and 15 Alumni about to turn, respectively, 85 and 80, as listed below with dates of birth.

January, 1872—ARTHUR S. PEVEAR, '93, on the 4th; GEORGE E. HARKNESS, '96, on the 15th; ALFRED C. BEDORTHA, '05, and ROBERT C. FAYFIELD, '96, on the 31st.

January, 1877—MRS. D. K. CATLIN, '04; FREDERIC C. AYERS, '01, on the 3rd; PERCY W. WITHERELL, '99, on the 8th; ALBERT F. NATHAN, '99, on the 9th; ROBERT S. EDWARD, '02, and CASPER A. SCHMIDT, '03, on the 26th.

January, 1882—RICHARD M. LAWTON, '03, on the 1st; MRS. E. K. BURDETTE, '04, on the 4th; EARL G. CHRISTY, '06, on the 5th; GEORGE C. CAPELLE, '03, on the 8th; FRANCIS J. CARTY, '04, and MAURICE W. CARTY, '04, on the 10th; HAROLD L. NORTON, '03, and ERNEST G. SCHMEISSER, '05, on the 15th; GEORGE A. GRIFFIN, '07, on the 18th; JOHN S. BURROWS, '04, on the 23rd; ALBERT C. FERRY, '04, on the 24th; J. HOWARD PEW, '03, on the 27th; HENRY L. OAKS, '06, on the 28th; SEYMOUR F. BARNETT, '09, on the 29th; and KIRK W. DYER, '07, on the 31st.

Boston Stein Club Hears Jacob Fine

On November 14, the M.I.T. Boston Stein Club held its fall dinner meeting at the M.I.T. Faculty Club. Dr. Jacob Fine, M.D., Chief Surgeon at the Beth Israel Hospital, addressed those present on the subject of "Significant Advances on the Frontiers of Medicine."

One of the objectives of the Second Century Fund campaign is of particular importance to Stein Club members—scholarship funds—and provisions have been made for members who have already made their SCF pledges to allocate their gifts to special funds within the Boston Stein Club Freshman Scholarship Fund. Oscar H. Horovitz, '22, has been asked to coordinate Scholarship Fund allocations at the Institute. Members are invited to call him (LA 7-6783) with any questions about this matter.



M.I.T. MEN IN KOREA met last fall with Edward C. Edgar, '35, of the New York Club. Pictured from left are Jae Lin Woo, '58; Mr. Edgar; Chung Soo Oh, '27, Club President; and Chang Sup Yoon, '59, Secretary.

Class News

'95

Greetings and best wishes to the 16 living members of our M.I.T. '95 Eighty-Plus Club; most of our members are located along the East Coast with one in Ohio and one in California as follows: Halbert G. Robinson in Patten, Maine; in Massachusetts, Charles W. Berry, Lexington; C. Willard Bigelow, Brookline; Luther Conant, Cambridge; Andrew D. Fuller, Brookline; Mrs. Henry C. Grant, Reading; Ralph R. Lawrence, Belmont; in Connecticut, Thomas H. Wiggin, Rowayton; in New York, Alfred P. Sloan, Jr., New York City, and John Dyer, Albany; Charles L. Demeritt in Union City, N.J.; in Virginia, Judson C. Dickerman, Charlottesville, and Rittenhouse R. Moore, Virginia Beach; Frederick W. Harris in New Smyrna Beach, Fla.; George L. Bixby in Columbus, Ohio; and Robert D. Farquhar in Berkeley, Calif.

Since **Luther Yoder** left us last year after many years of devoted service, '95 has been without a secretary; as yours truly has some time yet to fill out his term as the '95 member of the M.I.T. Alumni Council, and as he believes it to be to the advantage of the class to have another person as secretary, how about your being secretary now?—**Andrew D. Fuller,** Assistant Secretary, 120 Tremont Street, Boston, Mass.

'96

Searching among the Alumni records recently for some news of our class, I learned that the death of a classmate 14 years ago had been reported to the Alumni Association by the grandson of the deceased, **Pierre E. Richards**. . . . Also on record is the death of **Albert Orlando Wight,** IV, on October 16. He was an architect from 1896 to 1922; he has since been a fruit grower in Palo Verde Valley, Calif. . . . **Charlie Hyde** sent a postal from Washington, where he spent October with his daughter. He says he lost many books and papers in a fire and recently received a copy of the Class of '96 45th Reunion history from Mrs. Waterman. There is another copy for any member who asks for it. . . . At the last Council meeting, Joe Harrington, Jr., and Joe, 3d, came over to your secretary to say "Hello" through him to the class; Joe, 3d, had just joined the Council as representative of the class of '61. At the meeting, Professor Mueller spoke on "Problems of Undergraduate Teaching." He said that teachers are born not made, but that they still need some training, as any of us who have grandchildren who come to us for aid in mathematics realize.

. . . Speaking of mathematics, Miss McCormick, the Assistant Treasurer of the Alumni Association, certified that I was secretary and treasurer of '96 so that I might transfer the operating funds of the class from a regular checking account to a savings account, which I did. The service charge on the checking account amounted to nine per cent of the fund.—**James M. Driscoll,** Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge,** Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

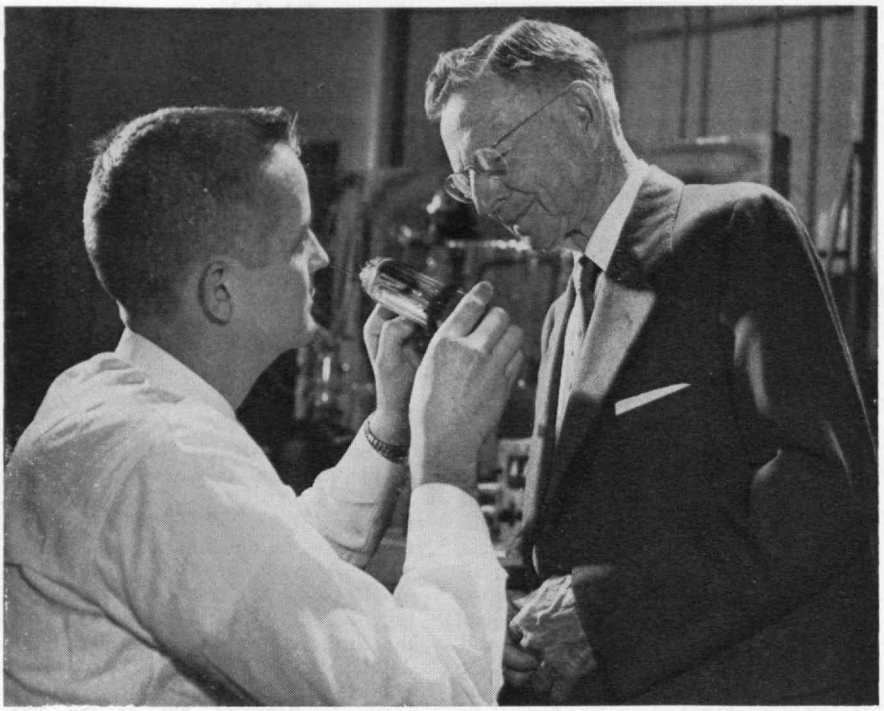
'97

Lacking recent news from the survivors in our class, we are forced to return to our early days. Our first class meeting was held on September 30, 1893. **R. F. Hosford** was chosen temporary chairman and **D. C. Campbell** was temporary secretary. A committee consisting of Campbell, Otto Pike, Percy Stiles, Arthur Franklin and Frank Mansfield was chosen to draw up a constitution. At that meeting "Much trouble was caused by ungentlemanly sophomores who endeavored to disturb the meeting." The second meeting was held October 16, and the report of the committee on a constitution was read; the first three articles were adopted. Then: "It was voted to request all sophomores to leave the meeting, and if they did not do so they were to be forcibly ejected. This vote was put into immediate action." President Walker addressed our third meeting on October 18 and requested the class to be careful of the property in Huntington Hall and also to show the sophomores how to be gentlemen. **John Taylor** was elected temporary secretary to succeed Campbell.

A change of address has been received for **Charles R. Currier,** I: 199 Canton Street, Westwood, Mass.—**John P. Ilsley,** Secretary, 26 Columbine Road, Milton 87, Mass.; **Jere R. Daniell,** Assistant Secretary, R.F.D. West Franklin, N.H.

'98

Our President, **Daniel W. Edgerly,** who lives at the University Club of Chicago, Ill., and the secretary, who has been traveling a bit during the past two months, and our Assistant Secretary, **Frederic A. Jones,** who lives at 286 Chestnut Hill Avenue, Brighton, Mass., and who also has recently taken to traveling, have nevertheless been corresponding and conferring concerning the coming 65th Reunion of the class. This event is scheduled for Alumni Day, June, 1963—thus, one and-a-half years in the future. We have quite a bit of data for the Class News, which ordinarily would appear in the January, 1962 issue of The Technology Review; but for obvious reasons, it seems wise to delay the publication until the February issue.—**Edward S. Chapin,** Secretary, 2 Gregory Street, Marblehead, Mass.; **Frederic A. Jones,** Assistant Secretary, 286 Chestnut Hill Avenue, Brighton 35, Mass.



WILLIAM D. COOLIDGE, '96, Director Emeritus of the General Electric Research Laboratory, whose own work has produced 83 patents, is shown at right examining a thyratron tube which has resulted in Thomas A. Vanderslice's first patent. Dr. Coolidge helped improve both light bulbs and x-ray apparatus.

'99

On November 15, 1961, the living members of the class numbered 61. Degrees by courses: I-5; II-4; III-1; IV-5; V-4; VI-7; VIII-1; X-2; XI-1; XIII-2; specials, 29. The secretary would prefer to write and you to read about the interesting things that our classmates have been doing as leaders in their communities while they are alive rather than an obituary after they have passed on. So please send me some information. News clippings are very useful if you are too shy to tell your own story. . . . **Norman** and Mrs. **Seavey** spent a month touring their beloved New England. The Orlando group had 36 at the National M.I.T. Alumni Night. In Boston the class was represented by **Miles S. Sherrill,** 5 Crawford Road, Lexington, Class Representative; **William A. Kinsman,** 348 High Street, Newburyport, President; **Hervey J. Skinner,** 42 Park Avenue, Melrose, Class Agent and Treasurer and—**Percy W. Witherell,** Secretary, 84 Prince Street, Jamaica Plain, Mass.

'01

This month's notes will be mainly a report of the 60th Reunion of the class which took place last June 10-11. The Endicott House in Dedham was again the scene of our get-together as it proved so satisfactory two years ago. The reunion committee was Derby, Willard Dow, Ed Davis and the secretary, with Dow doing most of the work. The weather was varied with some showers and some sun. The men could come any time after breakfast on Saturday and all had to leave after breakfast on Sunday. Four of the men came for lunch and the rest appeared at intervals during the afternoon. Those present included William C. Arsem, Lyman Bigelow, Edmond Brigham, Ed Davis, Bob Derby, Willard Dow, Bill Farnham, Phil Moore, Ralph Stearns and Taft. The afternoon was spent in recalling old-time events almost forgotten. At the end of the afternoon liquid refreshments appeared accompanied by canapes. At seven o'clock came the class dinner which left us all with an enjoyable satisfied feeling. While at the table, President **Davis** read his usual poem which was enjoyed as his previous effusions have been. The secretary read the financial report, showing a balance of $288.20 on June 1, and a list of those who had passed on since the 55th Reunion. This included 39 members. Their names have appeared in the annual reports. A moment of silence was observed in their respect. The nominating committee brought in the name of **Bob Derby** for president. He was declared elected. We then adjourned to the library where coffee was served. Bob Derby had a few slides from his last trip which we showed on a screen. Bob then told us much about his last trip and answered many questions.

Later **Ed Brigham** left for home and **Dow** took **Arsem** to Needham where he spent the night; **Farnham** also spent the night elsewhere. Some then left for bed but five or six sports turned on the television and watched the last half of Archie Moore's championship fight. All was quiet about 11:30 Sunday morning; the seven who had stayed overnight met for breakfast and had a last enjoyable meal together. **Lyman Bigelow** brought from

Hawaii four very large pineapples, two of which he proceeded to carve so that the shell was left whole. He took out the inside, cut it into strips then replaced them all in the shell. The strips were taken out to be eaten and were delicious. After breakfast the men departed and the 60th Reunion was a thing of the past. . . . The following men attended Alumni Day exercises: Appleton, Willard Dow, Farnham, Moore and Stearns. . . . There will be no class notes in February as the annual report is then due.—**Theodore H. Taft,** Secretary, Box 124, Jaffrey, N. H.

'02

A letter from Mrs. **Archibald H. Ehle** tells of the death of her husband last August. A clipping from the Philadelphia Inquirer was enclosed and we quote, "Archibald Hyde Ehle, engineer-inventor and a retired executive of the Budd Company, died Sunday at his home 427 Montgomery Avenue, Haverford. He was 82. In 1901 he started work at the Baldwin Locomotive Works where his many inventions led to the gasoline locomotive used in World War I and various electric railroad vehicles. He helped build the first diesel locomotive made in the United States. When he left Baldwin in 1933 to join the Budd Company, he was vice-president in charge of sales. Mr. Ehle helped the Budd firm become active in the railroad equipment business. He was instrumental in the sale of the first Budd stainless steel train, the Burlington Zephyr. He retired in 1947. Surviving is his wife, the former Helen Sellers." . . . Through a clipping from The New York Times it is learned that **Frank P. Harris** died on September 17 at Cranford, N.J., after a long illness, at the age of 83. He was formerly a chemical engineer in New York and at the Picatinny Arsenal, near Dover, N.J. Harris was graduated from Amherst before entering M.I.T. He left a wife, Mrs. Madeleine Davies Harris, and two daughters.

Last October to start on our 60th Reunion, I sent out 71 letters to members of the class with a reply postal enclosed, and to the time of writing these notes, November 15, 35 cards have been returned and 16 indicated probability of attendance. As might be expected several of the class report limited activities. **C. F. Gardner** was in an auto accident last January and limits his driving to short distances. **Frederick Mathesius** reports he is practically blind and has a limited sense of hearing. **Austin Wood** reports himself a semi-invalid after a serious operation and that his heart is not what it used to be. Unfortunately, Wellesley, '97, has its 65th in June and Mrs. **Mabel Wall Sweetser** must be there instead of with us. Keep June 8-11 in mind and plan to come back to mix with your old friends.—**Burton G. Philbrick,** Secretary, 18 Ocean Avenue, Salem, Mass.

'03

Cheerful notes from local members and visiting classmates who were in Boston during the past summer told of the exhilarating experience of joining with all age groups of fellow Alumni at the M.I.T. Luncheons. These festive occasions were held monthly at the historic Ye Olde Union Oyster House, 41 Union Street, Boston. We hope that it will be preserved for many more such joyous occasions, but there is some possibility that it may be razed by the Boston Redevelopment Project now in progress.

At our not-too-distant 60th Reunion in Cambridge, we will be amazed at the skyscrapers that dwarf our old Rogers and Walker nucleus. This stupendous group of buildings, now in the process of construction, will complete the $15 million Technology Square development and change the skyline of M.I.T. Your secretary is indebted to **Arthur S. Gibbs,** VI, of Brockton, Mass., from whom he received an old copy of "Technique," in which appeared the following ad: A. D. MacLachlan, ('96), Tech Co-operative Store, 214 Clarendon Street, Boston."

Albert E. Lochridge, II, considered one of America's foremost water engineers, died on October 3 at the Springfield Hospital at the age of 84. He was retired chief engineer of the Springfield Water Department and lived at 17 Garfield Street. He was known as the father of the Springfield Water System after he built the Little River Reservoir in 1912. At that time it was the largest earthen dam in the world; still in use, the Little River Reservoir holds 22 billion gallons of water and was the start of the Little River-Cobble Mountains water system that experts say gives Springfield one the best water supply programs in the country. Albert was graduated from Beloit College in Wisconsin before coming to M.I.T.

He was active in Masonic circles and Templar; in addition, he was past-president of the New England Waterworks Association and a member of the M.I.T. Club of Springfield. He is survived by his wife, Mary L. (Malone); a sister, Mrs. Louise L. Watkins of Springfield; and a brother, Harvey H. Lochridge of Long Beach, Calif. . . . **Hermon F. Bell,** Course II, who was employed by Lybrand Ross Brothers and Montgomery, New York, passed away in September.

Paul R. Parker, XIII is still enjoying retirement at his home at 57 High Street, Kennebunk, Maine. . . . **George E. Kershaw,** XIII, modestly states that he has not accomplished anything world-shattering during his 60 years of coping with engineering problems. However, the following milestones from his career paint a somewhat different picture. . . . He installed 1) the first General Electric Curtis turbine in an American passenger and cargo ship ("S.S. Creole"), and 2) the first magazine cooling system (CO_2) on a U.S. Navy vessel, in the process breaching a Navy precedent. The unit was placed below the protective deck. In addition he was instrumental in selling and distributing the first cutting torches (oxcy-acetylene); he sold the first portable set to the Navy for use in its shipbuilding yards work, and the first set sold to a railroad—the Western Railroad for its Roanoke, Va., shops—in 1908, when it was known as a "gadget." He supplied the wrecking equipment (cutting torch) used for the removal of the "U.S.S. Maine" from Havana harbor.

In addition, George advocated and installed high degree superheat for Marine Reciprocating Steam engines and installed a high degree superheater within the first turbo electric cargo ship, the "S.S. Eclipse." He supervised machinery adjustments on the coasts for interned German vessels; these were fitted with Schmidt Fire Tube Superheaters,

Deceased

LEO W. PICKERT, '93, Oct. 14
JAMES C. KIMBERLY, '94, Oct. 17
ALBERT O. WIGHT, '96, Oct. 16*
RUDOLPH J. CLAUSEN, '00
JOHN L. DAKIN, JR., '00, May 7
ARCHIBALD H. EHLE, '02, Aug., 1961*
FRANK P. HARRIS, '02, Sept. 17*
HERMON F. BELL, '03, Sept., 1961*
ELBERT E. LOCHRIDGE, '03, Oct. 4*
WALTER R. MACCORNACK, '03, Nov. 7
EMMET COCKRILL, '04, Aug. 4, 1960*
EDWARD F. PARKER, '04, Nov. 1*
EDWARD W. WHITE, '04, Oct. 9*
ARTHUR K. TYLEE, '07, April, 1961*
LESLIE B. ELLIS, '08, Nov. 1*
LAWRENCE G. RICE, '10, July 3
RALPH E. VINING, '11, July 11*
ROGER B. STONE, '12, Oct. 19*
GAIUS E. HARMON, '13, Oct. 6
EDWARD H. SMITH, '13, Oct. 29
FOREST J. FUNK, '15, Oct. 8*
EDWARD W. ROUNDS, '17, May 2*
SUNG-SING KWAN, '19, Nov. 27, 1960*
HARRY H. MARDOIAN, '19, Sept. 12*
JOSEPH K. GODFREY, '22, May 10*
KENNETH G. HAMILTON, '22, Nov. 2*
MRS. EDWARD C. LUKENS, '22, May 9*
HAROLD W. M. SECORD, '22, May 7*
GREGORY FERENBACH, '23, Oct. 13, 1960
MATHEW H. CONNORS, '23, Oct. 18
ALAN D. GOODALL, '24, Sept. 20*
PAUL C. HEDENSTAD, '24, Oct. 12
JOHN H. LEWIS, '24, March 20*
HUGH M. PHINNEY, '24, June 30*
MILTON B. BARBA, '25, Oct. 3*
KENNETH L. STELLE, '25, Jan. 9*
FRED W. WATERMAN, JR., '25, Nov. 5
FELIX WINSOR, '25, Sept. 8*
EDGAR J. DOOLITTLE, '26, Oct. 23*
KENNETH M. GOLD, '29, Oct. 15*
JESSE W. BILLINGS, '30, Oct. 5*
GEORGE B. THORP, '30, Oct. 28, 1960
HENRY L. CARLETON, '32, June 22
CHARLES B. SEIBERT, '32, June 12
WILLIS G. CARSLEY, '33, Oct. 8, 1960*
FRANCIS H. MACDUFF, '33, July 1*
DONALD G. ARNDT, '34
SAMUEL J. LORING, '36, Nov. 5*
THEODORE S. LISBERGER, '38, Sept. 1*
C. KENNETH CARR, '39, Oct., 1961
EDISON POWERS, '39, Aug. 12
JEAN V. LATIMER, '41, Oct. 7, 1960
JOHN J. HESS, JR., '43, Jan., 1961
KENNETH C. RATHBUN, '51, July 8
PETER J. BLECKE, JR., '52, May 6, 1960
MRS. YVETTE G. CROUSEL, '60, April 1*
GERALD R. MCCULLOH, '60, July 4*

unfamiliar to most American engineers during World War I. He has assigned seven patents to the Superheater Company, including one for a water tube boiler.

During World War II, Paul was instrumental in the building of 63 baby flat tops (converted C-3's); 15 C.V.E.'s; 105 Class A carriers; 4 Navy tankers; 2 troop ships and a seaplane tender on the Pacific Coast.

His latest endeavors have been in connection with nuclear Polaris subs—a far cry from the battleships of 1905, when George ran the first trial trip of the "S.S. Robin Gray" on Puget Sound. His son, a licensed oceangoing marine chief engineer, took her on her last voyage from New York to England. With a skeleton crew of Navy demolition detail, he ran her onto Omaha Beach and blew her up as a breakwater for landing boats of Eisenhower's European invasion. . . . George concludes his exploits by figuring that he has traveled 250,000 miles (knots) over sea water and 750,000 miles over the U.S.A. by plane, bus and rail during his career. He can now truly relax in restful quietude while blessed still with energy to the n-th power.—**John J. A. Nolan,** Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis,** Treasurer, 131 State Street, Boston, Mass.

'04

Last month we didn't have any news to report. This month is even worse, for all we have are three obituaries. Don't wait for this to happen to you in order to be mentioned in these notes.

We learn from the Alumni Office that **Emmet Cockrill** of Course II died in Columbus, Ga., August 4, 1960. Also from the Alumni Office news that **Edward W. White,** Course V, died at Peabody, Mass., on October 9, 1961. We have no further details on either of the above. . . . The third death to report is that of **Ed Parker** at Reading, Mass., on October 31. Ed was one of the loyal Boston group who in our earlier days sparked annual reunions, usually somewhere on Cape Cod. The favorite spot was East Bay Lodge. Ed seldom if ever missed one of our reunions and had an interesting collection of photographs he had taken. He was active in civic, business and fraternal affairs in Reading and will be missed by numerous friends. Flowers were sent to his funeral in the name of our class.

It may be pertinent at this point to remark that our treasury is nearly empty. Perhaps some of you would like to add something to its contents.—**Carle R. Hayward,** Secretary, Room 35-304, M.I.T., Cambridge 39, Mass.; **Eugene H. Russell, Jr.,** Treasurer, 82 Devonshire Street, Boston.

'06

The National M.I.T. Alumni Night last October 19 was probably fully covered in the December Review so for the record we will just report the attendance at Walker Memorial of President **Jim Kidder, Tom Hinckley, Chester** and Ruth **Hoefer,** and your secretary. The Boston Club (successor to the Luncheon Club) sponsored the local gathering and by a special seating plan contrived to prevent classmates sitting together. However, we did circulate after the eats to say "Howdy" and chat a bit. The program that went on the air was M-C-ed by my longtime neighbor, Phil Peters, '37, who kept things moving. The reference to the 1916 nationwide telephone hook-up reminded me that it was only about 18 months before that (January 25, 1915) the Bell System initiated coast-to-coast telephone talk. Today it can all be put on video tape and seen as well as heard anywhere in the world by using available devices. Before long Bell will be bouncing it off satellites, so I hear.

During the October 11 Awards Banquet of the 34th Annual Meeting in Milwaukee of the Water Pollution Control Federation, the Charles Alvin Emerson Medal was awarded to **Samuel A. Greeley,** XI. In presenting the medal, Federation President Ray E. Lawrence cited Mr. Greeley for his "devotion to the highest principles of the sanitary engineering profession and for his exemplary career as a renowned consultant." He was a member of the original "Committee of 100" responsible for the detailed organization of the federation. His firm, Hanson and Greeley, has had extensive work throughout the U.S. and in foreign countries during the last 40 years. He has served personally on 15 boards of engineers for municipalities, and the firm has been involved in the design and supervision of construction and operation of water, wastewater, and refuse plants across the country. "It has been estimated that Mr. Greeley's firm has served as engineer for over 150 water works, 300 wastewater treatment plants, and 50 refuse works." During the two world wars the firm served the government in various capacities and at various locations. He is an honorary member of the ASCE, having been a director as well as chairman and member of several committees, and has been awarded the Hering, the Roland, and the Laurie prizes for technical papers, also the Baker Medal of the Franklin Institute. The news release contains an excellent photo of Mr. Greeley and President Lawrence during the presentation of the placque, to which Sam responded with profound thanks and quoted a verse by an ancient Greek poet-farmer (Hesiod) written about 800 B.C. Mr. and Mrs. Greeley have resided in Winnetka, Ill., for many years, friends and neighbors of L. H. G. Bouscaren, '04, who also informed me of the award.

Another classmate made the news in October when **Joe Santry,** VI, as chairman of the board of Combustion Engineering Company, announced that C.E. had been awarded a contract by Consolidated Edison of New York for the steam generating plant to power its record-breaking 1,000,000 kilowatt turbine—a $131 million installation scheduled for operation early in 1966. The boiler will be designed, manufactured, and erected by C.E., a feature of the design being provision for operating the boiler in two sections, thus permitting a shutdown of half it and running the generator at half-power. At full power output the steam generator will deliver 6,500,000 pounds of steam per hour to the turbine at a pressure of 2,400 pounds psi. It will have a footage of nearly 200 feet and will be comparable in size to a building 18 stories high, containing some 310 miles of tubing and burning 350 tons of coal per hour (at full rating). It will evaporate enough water every 24 hours to meet the daily requirements of a city of 135,000 people. Financing what will be the largest steam generating unit in the world will be something, but a bond issue will help.

The Fund letter you received in November from our class agent must have given you cause for reflection when you studied the accompanying Fund Report for 1961 and discovered with dismay that with one exception '06 had the lowest "average contribution" of all classes down to 1928, and that less than half of the active class roll gave to the Fund. Can't we do better? . . . Saw **George** and Elsie **Guernsey** at a meeting in November and George showed us the kodachromes taken at Alumni Day. The one of our table at the luncheon is excellent. How did yours come out? Had a phone chat with Jim while putting these notes together. He is developing a green thumb, I learned—not from golf but working on his flower garden—and is chairman of the committee on social action of his church, so he is trying to do something about the dirty politics and corruption in the Old Bay State. . . . Here are a few address changes: Colonel **George Hobson,** I, is now at 65 Thomas Street, Portland, Maine; Miss **Jane Patten** is still at 123 Eliot Street, South Natick; **Frank Benham,** I found, was on his way south to Daytona Beach early in October; he winters there after summering in Arlington where he plays golf with Jim. You can find him in P.O. Box 1175.

Another migrant is **Charles E. Abbott,** XIII, who summered at East Falmouth on the Cape and come fall probably moved south to Naples, Fla., where his address last year was 427 First Avenue South. By the time that you read these notes the other regulars are probably down there too: the **Abe Shermans** and **Burton Kendalls.** As chairman of the membership committee of the '06 Travellers Club, may I suggest that the Northerners corral all the '06 "natives" at a lunch party at some central point and then send me a report! In the Wellesley "Townsman" for November 2 appeared the following item: "At their home on Cushing Road where they have resided for the past 45 years, a surprise Golden Wedding Anniversary party was held on Saturday afternoon for Mr. and Mrs. **Edward Bennett Rowe,** given by their son Edward and his wife Anne. The young couple reside in Waterford, Conn., and had planned and provided everything necessary to ensure an enjoyable affair, including an "album of remembrance," refreshments, and a wedding cake. The grandchildren—Nancy, Edward, 3d, Martha, and Marshall—

were a busy team before, during, and after the party. Mr. and Mrs. Rowe were so happy to greet some 50 of their long-time friends and neighbors, several of whom had been present at the wedding on Prince Street in West Newton, including three bridesmaids. Add an album of golden cards to treasure and their joy was complete."—**Edward B. Rowe,** Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

'07

The fall dinner of the Class of 1907 took place on November 17, which was three days after these notes had to be mailed to the Review office. Return cards were sent to 50 members in and around the Boston area, with a request for class news. Returns so far have been very meager. Nine or ten of the "regulars" were on hand to partake of a roast beef or lobster dinner. Our speaker was Dr. B. Alden Thresher, '20, formerly director of admissions at the Institute . . . **Fred Dempwolf** asked to have his best regards given to all present. . . . **Jim Barker** sent his regrets at being unable to get to Boston. . . . **Charlie Eaton** wrote, "I go south with the birds and do not return until the last of May, following the birds." . . . **Phelps Swett** wrote that he was making plans to attend our 55th Reunion in June . . . **Jim Garratt** is still on the active list and has been busy finishing up a new water supply reservoir for the city of Newark. . . . **Bob Albro** has been out of commission since June, when he underwent major surgery but is now able to walk without a cane. . . . **Kelly Richards** sent his best regards but writes that on Friday nights he is not available to attend class functions.

John Bradley states that he had a very pleasant visit with **Frank MacGregor** recently. . . . **Bill Otis** has already taken off from his home in New Jersey for Florida. His address there is 1524-72 Gulf Shore Boulevard, Naples. . . . **John Frank** wrote, "Sorry I can't be there. Give my best wishes to the gang." . . . **Parker Dodge** sent me a letter from Chevy Chase from which I quote, "I am back in our winter home in Chevy Chase, and so will not be at the dinner, but send best wishes to all who come. We spent the entire summer of '61 and hope to spend the next at a retirement home my wife designed and had built, on the edge of Eggemoggin Reach in Maine. I have not seen any Tech men (except my wife) for a long time."

Please note on your list of class members the following changes of address: **Edward H. Temple** to 41 Tremont Street, Boston; **Floyd A. Naramore,** Bayview Manor, 11 West Aloha Street, Seattle 99, Wash. . . . It is indeed with regret that I received notice of the death of **Arthur K. Tylee,** Course VI, of 21 Burton Road, Forest Hill Village, Toronto, Canada. The last time we saw Art was when he attended our 40th Reunion at Oyster Harbors in July, 1947.

Our December notes recorded the death of **Albert L. Burwell,** Course V. I have had correspondence with the family and give below a brief account of his activities since leaving Tech. These excerpts are taken from Oklahoma Geology Notes, Volume 21, Number 11, November, 1961: "Albert Lewis Burwell, for 20 years industrial chemist of the Oklahoma Geological Survey, passed away at his home in Norman on September 20 at the age of 76 years. Since his 70th birthday he had held a half-time appointment from the Geological Survey, continuing his investigations of Oklahoma clays and shales in spite of poor health and numerous trips to hospitals for treatment of an ailing heart. His passing is mourned by many friends, who will miss his friendly counsel and his deep interest in the mineral resources of Oklahoma.

"After graduation from M.I.T., he was employed as a chemist in the manufacture of shoe polish and in tanning leather. During and shortly after World War I, he was employed in making smokeless powder and dyes for the DuPont Company in New Jersey. Mr. Burwell came to Oklahoma in 1921, living first in Broken Arrow and moving to Tulsa in 1930. Here he became acquainted with mineral resources and took an active interest in the production of oil and gas in northeastern Oklahoma. His appointment as chemical engineer and industrial chemist for the Oklahoma Geological Survey was made in October, 1941. Mr. Burwell moved to Norman and assumed his duties, outlined by Robert H. Dott, Director, as consisting mainly of finding new uses for Oklahoma mineral raw materials. He described how little-used volcanic ash could be made into porous insulating material, and for this work he received a patent which was assigned to the University of Oklahoma Research Institute. Another patent, also assigned to the Research Institute, dealt with recovery of ammonium sulfate from the extensive deposits of gypsum and anhydrite of western Oklahoma. He showed how the feldspar of Oklahoma granites could be recovered for use in making glass, how it was possible to recover magnesia from waste oil-field brines, and how to make special types of cement from the marlstone of the Arbuckle Mountains. One of his special interests was in clays and their utilization in the manufacture of ceramics, refractories, and lightweight aggregate."—**Phil Walker,** Secretary-Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould,** Assistant Secretary, 409 Highland Street, Newtonville 60, Mass.

'08

Our first dinner meeting of the 1961-1962 season was held at the M.I.T. Faculty Club, Cambridge on Wednesday, November 8 at 6 P.M. The following were there: Bunny Ames, Bill Booth, Nick Carter, Sam Hatch, Paul Norton and Joe Wattles; also Mesdames Ames, Hatch, Norton and Wattles. We assembled in the cocktail lounge and were able to capture a couple of tables and enough armchairs for our party. While enjoying our favorite tonics and the fine crackers and cheese from the buffet, we swapped news of our summer activities and doings of absent classmates. About 6:30 P.M. we adjourned to private dining room Number One, where we enjoyed our favorite foods. After dinner, **Joe Wattles** showed fine kodachromes taken by **Bill Booth** and **Paul Norton,** and some taken by Joe on his and Eudora's trip around the world last spring en route to the Rotary International meeting in Tokyo. Flying by jets, they visited Portugal, Spain, Egypt, India, Siam, Hong Kong, Japan, and Hawaii.

Our second dinner meeting of the 1961-1962 season will be held at the Faculty Club on Wednesday, January 10, at 6 P.M. Try to join us, won't you? Remember, ladies are invited. We can promise you a good time.

How about the Alumni Fund? Have you made your gift? If not, please do it soon. . . . We are very sorry to report the death of **Leslie B. Ellis** on November 1, 1961. He will be missed at our future get-togethers. He was a very loyal supporter of '08. The sympathy of the class is extended to Helen in her great loss. Joe Wattles, Nick Carter, and Bunny Ames were able to attend the funeral on November 3, 1961 at the Highlands Congregational Church, Melrose Highlands, Mass. "So mote it be."—**H. Leston Carter,** Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles, 3d,** Assistant Secretary and Treasurer, 26 Bullard Road, Weston 93, Mass.

'09

We met **Mayo Hersey,** II, while he was visiting Harvard to attend a memorial meeting for the late Professor Percy W. Bridgman at the Harvard Memorial Church. He still lives in Providence and carries on his research work in lubrication at Brown University. Occasionally he gives a lecture at the university on this subject. . . . Recently we received a copy of the new book, "George Washington's Mother," by Alice **Desmond,** with the compliments of Alice and **Tom.** So far we have had time only to glance through it and study the several interesting illustrations. We are taking it to read on the train during a business trip. It is needless to say that along with the biographical and historical books of which Alice is the author, such as "Bewitching Betsy Bonaparte," "Martha Washington," "Glamorous Dolly Madison," etc., the book is authentic in every detail as well as most interesting. We recommend it highly.

In the December Review we told of the passing of **B. Edwin Hutchinson** and stated that we had written to Mrs. Hutchinson expressing the sympathy of the class as well as our own. We have received a note stating "Mrs. B. E. Hutchinson and her family will hold in grateful memory the kind expression of your sympathy." The Hutchinson son, John, also wrote the following note: "Mother is feeling better each day, but she is not yet allowed to write. She has asked me to

tell you how much she appreciated your kind letter. We are all most grateful for your thoughtfulness. Father was always very proud of his M.I.T. associations."—**Chester L. Dawes,** Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretaries: **George E. Wallis,** Wenham, Mass.; **Francis M. Loud,** 351 Commercial Street, Weymouth 88, Mass.

'10

Hal Billings called me on the telephone last week and told me he had celebrated his 50th wedding anniversary on October 25. Congratulations to Hal and his charming wife, and may they enjoy many more years together in happiness and health. . . . News of classmates has been extremely meager for the last few months. Only four members of the class attended the National Alumni Night sponsored by the Boston M.I.T. Club at the Walker Memorial on October 19. Those attending were Dudley Clapp, Arthur Curtis, Hal Manson and your Secretary, Herbert Cleverdon.

After this small get-together, Dudley and his wife took a trip to Williamsburg, Va. Both were extremely pleased with this restoration of colonial buildings to their original design and furnishings. Perhaps I may be forgiven for giving a personal story of my connection with the restoration of Williamsburg to make up for the lack of 1910 news. Since 1928 I have been engineering consultant for the architects, Perry, Shaw and Hepburn, and for the Architectural Department of Colonial Williamsburg. It has been a fascinating and wonderful commission. The first building to be restored was the original building of William and Mary College, generally known as the Wren Building, as Sir Christopher Wren is believed to have made the design. This building had been through fires, wars and various changes since it was built in the Seventeenth Century. A completely new structure was necessary, although exterior walls and all remaining original work were retained.

The Colonial Governors' Palace and the Capitol Building were completely restored as both buildings had been destroyed by fire and the foundations alone remained. Other restoration consisted mainly of residential buildings of wood construction except the president's residence and Brafferton Hall of the College, which were brick structures and undoubtedly familiar to M.I.T.'s first president, William Barton Rogers. My work not only included the structural design for the restoration of the above, but also for hotels, the motel, stores, laundry, post-office and all other structures which have become necessary as this project has become so well known. Work has been continuous for the past 33 years, and at the present time we are designing the structural work for the third post office, which indicates the growth during these years. I feel that this commission has been the most interesting and satisfying of my professional career, and hope that my account will interest the class.—**Herbert S. Cleverdon,** Secretary, 120 Tremont Street, Boston, Mass.

'11

The 7-come-11 Dinner was held, as usual, on November 7 at the M.I.T. Faculty Club. Those present were Obie Clark, Henry Dolliver, Fred Harrington, Jack Herlihy, Charlie Linehan, Roy MacPherson, Morris Omansky, Carl Richmond, Suren Stevens, and O. W. Stewart, totaling 10. **Emmons Whitcomb** and **Jim Gannon** had planned to come but couldn't make it. If only one of them had come we would have had eleven, which we always hope for, at least. We had a very nice chicken dinner, and a "round-robin" talk, as usual. If **Dennie** could have been there we would surely have had a nice "song-fest." He was a wonderful "guy," and we all miss him. . . . Gannon wrote; "All eight children now launched: lawyer, teachers, physiologist, chemist, in Washington D.C., New Jersey, California and Massachusetts. I'm enjoying our 31 grandchildren." Quite a family! . . . **Marshall Comstock's** card said: "I'm sure sorry but we made plans some time ago for taking in the Yale-Dartmouth game November 4 and visiting with daughter in Meriden and son in Easton for a few days. Hope to be able to come next time. Best regards to all." . . . **George Forristall** and **Maurice Lowenberg** had said on their cards "shall try to attend," but both were unable to come because their wives had troubles and needed them. Forristall has a new street address in Newtonville—147 Lowell Avenue—and he's now associated with the Modern Printing Company in Newton. . . . **Howard Williams** (Los Angeles) wrote: "Am terribly sorry that I cannot be in Boston and attend this dinner. Enjoyed greatly our 50th Reunion and look forward to seeing you all at another in the near future." . . . **Gordon Glazier** wrote: "Sorry, will be in Virginia." . . . **Don Stevens** returned his card with no comments. Our best wishes to him.

Jim Duffy sent a clipping from the Chicago Tribune reporting a visit to Chicago by our retired General **George C. Kenney,** former head of the Strategic Air Command and General Douglas MacArthur's chief airman in the Pacific, World War II. Kenney spoke at a luncheon in the Tavern Club, opening the drive of the Illinois Chapter of the Arthritis and Rheumatism Foundation, of which he is national president. He said Russia is not yet ready for war, or she would have started one. He deplored the lack of a real unified military service with one department, one chief of staff, one uniform, one plan for what we do when the whistle blows. He said that the defense services now have three good missiles and not one screw in any of them can fit in another. We have to train different crews for each; what we should do is scratch two and produce one, and that's something Congress is going to have to do. Kenney said he recently spent two hours with General MacArthur, now 81, and that he looks as though he'll live to be at least 100 years old.

Ralph E. Vining, Course III, of Baldwin, Md., died July 11, 1961. The Alumni Office was notified by Vining's widow. There were no further details. Our sympathy to her.—**Henry F. Dolliver,** Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy,** Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

'12

Word has just reached us of the death of **Agapito Salgado** of Honduras, who graduated with us in Course VI. . . . **Roger B. Stone,** I, of 1400 State Street, Harrisburg, Pa., passed away on October 19. No details are as yet available. . . . **Charles H. Mills,** IV, formerly of San Diego, Calif., passed away on April 8, 1961. We have no further information.

Ed Homan, who retired from General Electric several years ago and is now living in Marblehead, is just recovering from a serious stomach ulcer. His progress is very satisfactory and he will be with us next June down on the Cape. . . . **Ralph Symonds,** also of Marblehead, is just home from the hospital after a serious operation. His progress is very satisfactory and he will also be at the Cape. . . . **Bert Gale,** who is living in Boxford, Mass., is recovering from a slight heart attack and is practically as good as new; he is back at golf and home gardening. Bert and his wife spent three months last spring in southern Spain where they picked up a car and drove nearly all over the country. Very picturesque scenery at moderate prices. They hope to go again next spring and be back in time for the reunion. . . . **Rudolph Fox,** VI, writes from Denver that he uses his spare time at cabinet work and is fortunate in having a lumber yard nearby which carries rare and exotic lumber. Rudy expects to be back for the 50th Reunion at the Snow Inn in Harwichport.—**Frederick J. Shepard, Jr.,** Secretary, 31 Chestnut Street, Boston 8, Mass.; **Jonathan A. Noyes,** Assistant Secretary, 3326 Shorecrest Drive, Dallas 35, Texas.

'14

Happy New Year to all '14ers! It is now 1962, and our 50th Reunion is but two years away. Where will the reunion be held? Who will be in charge? Reserving facilities for the reunion is not easy, not only because of M.I.T. but also because of the many other colleges in the area. **Charlie Fiske** is now in the Barbados for the winter, but he and your secretary planned to meet early in December before he went south, to discuss the reunion. Perhaps he can think up some plans while he is away. . . . **Charlie Thompson** has just finished entertaining a group headed by his daughter and her husband, who is a professor of Russian history at the University of Indiana.

Al Devine, who has seen just over 47

years of service with the Massachusetts Registry of Motor Vehicles, retired on October 31. He has been the senior deputy registrar, and, I believe, served the longest of any such official. While the registrar is an appointee, the deputy registrar is a civil service position, so that Al has served under several registrars and has been, in effect, the senior operating member of the department. During his administrations, Al helped develop and utilize much of the technical equipment and many methods for motor vehicle safety now known. Like most of his classmates, he has no immediate plans other than just trying to catch up on the things he has been wanting to do in his own workshop and his flower garden.

A most pleasant and interesting meeting was held on October 19, celebrating the M.I.T. National Alumni Night in Boston. Telephone greetings were exchanged throughout the country and the voice of John J. Wilson, '29, was heard via transmission from the moon. **Francis Atwood, Ernest C. Crocker,** and your secretary were present. It is regretted that more '14ers were not among the large group present.

In a report just received from the Alumni Fund Office, your secretary at once caught the name of Herman A. Affel, '41. Quickly, he started to telephone the Fund Office that it was an error and Affel was '14, but the name of Jr. was fortunately noted first. Yes, it is another father and son working for M.I.T.; **Herman, Sr.** and Herman, Jr. are class agents for their respective classes. At the moment, Senior is ahead, but good luck to both.

From time to time there have been men listed as deceased with the designation "no date given" after the name and class. They are seldom included in the Class News. In practically every case their association with M.I.T. has been short. In the November issue was listed **Frank C. Balke** and **Harold H. Marsh.** The Alumni Office has known no address for either of them in the last 20 years, and in the case of Harold Marsh, the past 30; yet Harold Marsh was known to your secretary when he first joined the Institute. If at anytime anyone knows something about them, your secretary would appreciate knowing.—**H. B. Richmond,** Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **C. P. Fiske,** President, Cashmere, Paynes Bay, St. James, Barbados, B.W.I.; **H. A. Affel,** Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

'15

To all classmates and their families, sincere wishes that you enjoyed a happy holiday season and all the best for good health and good cheer this year. The annual New York City Class Dinner will be held at the Chemists Club, Friday, January 26, 1962. As usual, **Larry Landers** and **Bur Swain** have this all set up for our regular delightful evening together. Plan to be there with the old gang and the fellows who will go down from Boston. We are not getting any younger! . . . On October 14, in Larchmont, N.Y., Francis Paul Scully, Jr., was married to Anne Moonyene Harmon. They will live at 26 Chestnut Street, Boston. Congratulations and best wishes from our class to this young couple.

These nomadic '15ers: From Myrtle Beach, S.C., Bur and Joanne Swain wrote they were not fishing but enjoying swimming in that warm water. After an exciting North Cape visit, **Jerry** and Verta **Coldwell** took an overnight train ride from Leningrad to Moscow and then on to Hamburg and London, arriving home around September 10. . . . In the July, 1961 issue of "The Journal of the American Medical Society," **Jim Tobey** had a long interesting article on "The Physicians who signed the Declaration of Independence." How many of us know that of the 56 American patriots who signed that famous paper in 1776, five were physicians. Two, Dr. Josiah Bartlett and Dr. Matthew Thornton, were from New Hampshire; one, Dr. Oliver Wolcott, was from Connecticut; one, Dr. Lyman Hall, was a Connecticut Yankee who had migrated to Georgia; the fifth was Dr. Benjamin Rush, of Pennsylvania, who at the age of 31, was the youngest signer. He was also the only one who had an earned M.D. degree, although the others were qualified. All were in active practice at the time, except Wolcott, who had long since abandoned medicine for the law. All were active in public affairs, three of them later serving as governors of their states. Jim must have done a lot of researching to put this story together. In November Jim took off from the winter rigors of Newtown, Conn., to suffer in West Palm Beach. Any other emancipated classmates will find him there at 312 Walton Boulevard, two blocks north of Southern Boulevard. Drop in and cheer him up! Jim was recently made a member of the Yale University Faculty as lecturer in epidermiology and public health. Congratulations to the Colonel!

After our recent Boston Class Dinner **Pop Wood** wrote from Peterboro, N.H.: "I do enjoy being with the old gang and will always be on hand to hear those after dinner stories." With it a cordial invitation to visit his new place up there, which Fran and I hope to do soon. . . . It's good to hear from **Frank Boynton** and to know 1915 was well represented at that Alumni Night party. Congratulations to **Ray Stringfield.** "I attended the National M.I.T. Alumni Night on October 19 in Los Angeles, and it occurred to me that you might like a little note about it. A friend, Mark Ellsworth, '22, was kind enough to take me. It was a very fine meeting. I would estimate that between 250 and 300 people were present. There were six at our table, Mark and myself, William F. Moody, Jr., '54, and his very pretty young wife, Arlyn W. Boekelheide, '52, and another '54 man whose name now escapes me. During an intermission I circulated around and succeeded in seeing the following members of our class: Raymond B. Stringfield, president of the M.I.T. Club of Southern California, **Robert Welles, Harold R. Crowell** and **William Mellema.** There may have been other '15 men there, but these are the ones I was able to locate and chat with. The program was most interesting, particularly 'The Voices of Technology' and the talk by the General Chairman of S.C.F., John J. Wilson, '29. Ray Stringfield conducted the meeting in a most professional manner."

More of those interesting notes on **Al Sampson's** Alumni Day Cocktail Party invitations: Bill Mellema, Riverside, Calif.: "I am sorry not to be with you as I feel I am falling apart. My hearing is bad, and I have a diabetic tendency. Say hello to all classmates for me." We hope Bill is feeling better now. **Bob Mitchell:** "I have commitment to meet and greet 20 of our foreign affiliate representatives arriving in New York on June 12. Will be tied up in technical conferences next three days, and then must take them all to Montreal to inspect the large jet maintenance shop we have equipped there for Trans Canada Airlines—latest and best in the world—so I will be very busy all that week. After that will revert to beachcombing at our cottage at the Cape for the rest of summer. Why don't you and Ann drive down and visit us some week end? Helen and I would be happy to see you." **Sam Otis:** "I am presently in a quasi-retired status in the field of architecture, and my daughter (Mrs. M. E. Conaway) and grandchildren live in Sulphur Springs, Texas. I am in pretty good health, and I seem to have so many 'irons in the fire' of one sort or another that my time is well filled. Best wishes to all." **Frank Parsons:** "I retired last year unexpectedly. I joined 40-plus club and got relocated this month. Have five grandchildren now, with the sixth due this month. Mrs. and I are both in good health, although I took off 30 pounds by dieting. Hope you and yours are well also. Best regards." **Wally Pike** says: "Our annual Cocktail Party is the high spot of Alumni Day." **Cliff Sifton** from Belle Meade, N.J.: "Since retiring four years ago, I've been having a wonderful time doing the things I've always wanted to do, but never could before. All of the best to you, **Ben Neal** and **Azel** and all our old crowd. See you in 1965." . . . We now know about Ray Stringfield's marriage, but at that time last Spring he wrote: "Sorry Al, but life is going around too fast at the moment. I'm getting married June 17 to a beautiful blonde who teaches Latin in Montebello."

Bur Swain keeps too busy to be retired: "So sorry. Another top flight date gone. By the time I get retired again everybody will be tired of parties. Have fun, and good health to everybody." **Ray Walcott** underestimates his class popularity and standing, for he would be always welcome in the class and to class parties—a really grand guy: "We so enjoyed being with you last year, we hesitate to risk our welcome by coming back too soon." We would like to have seen **Ralph Waterman,** but do hope he enjoyed his summer in Spain. "We leave New York next week to spend the summer in Barcelona, Spain, and will be back here in September. Sorry we will miss your cocktail party and Alumni Day." We hope **Robert Welles** means he is an officer and not an

inmate: "I would come if it weren't quite so far. Next year my term of office with the Pasadena Home for the Aged will have expired, and I hope to have more time." **Harold C. Woodfall** is a new retiree: "I have been with the Town of Belmont, Engineering Department, for over 33 years. As of April 28, I have retired." **Harold Worthington** has a pleasant life routine: "I am engaged in the investment advisory business at 44 Wall Street, New York City and operate under my own name. I now go into my office twice a week, spending most of my time in the country. I do a little sailing for amusement. I live in Northport, Long Island, which has one of the finest harbors on Long Island Sound."

From **Herb Anderson:** "I did appreciate your letter and was very sorry to learn that you lost your brother. When we were in Florida last winter we never did get a chance to look up Jim Tobey. Your Boston meeting sounds interesting and I only wish it possible to be on hand but I am afraid it is out. In August we visited old friends in the Berkshires for a few days and then on to Christmas Cove and Boothbay, Maine, ending up with grandchildren who spend that month at Drake Island near Wells, Maine. There seems to be a continuous transportation between Birmingham, Mich., Prospectville, and Drake Island. Some grandchildren by air and others by car including dogs, baby sitters and six grandchildren with parents. O. B. Pyle, '16, comes by once in a while for a swim and reported a fine reunion of his class at Oyster Harbor. I seem to be moving along quite well. Best wishes to all." Working on the Second Century Fund are **Wink Howlett,** Cape Cod; **Chet Runels,** Lowell; and myself, Cambridge. This is a proud job to help M.I.T. and we hope you will all do your part, too. . . . The sympathy and feeling of our class go out to the widow and family of **Forest J. Funk** who passed away October 8 in Wilmington, Del. . . . What can you do to "help Azel?"—**Azel W. Mack,** Secretary, 100 Memorial Drive, Cambridge 42, Mass.

'16

Many are still talking and writing about the good time we had at the 45th Reunion last June in Osterville, and from all appearances the attendance is going to be unusually good at our interim 46th, scheduled to be held next June on the Cape. Our President, **Ralph Fletcher,** has this to say now, early in January: "Plan now. Write it down. Mark your calendar or your diary or whatever you mark, that the 46th comes on June 8-10. And don't miss, for these are exceptionally enjoyable affairs. See you in June!"

Vert Young tells of the latest open-air exploits of the Youngs, this time elk hunting in the Teton Wilderness in Wyoming, a little to the south of Yellowstone. But let Vert tell the story in his own way: "We came back empty handed. I had one shot at 600 yards at daybreak, which is not much of a chance. The hunting camp was located 26 miles by road and 9 miles by horseback from the ranch where we were based. Sylvia and I left the corral where the horses were kept about 3:30 P.M. in a nice comfortable drizzling rain, accompanied by a new camp cook and the horse wrangler as guide, leading two pack horses. The hunting camp was supposed to be about a two-and-a-quarter hour ride. After about three and a half hours of brisk riding, the guide pulled up and said: 'I think I took the wrong turn somewhere!' There was nothing for it but to spend the night in the woods. We had our sleeping bags, so in spite of the rain were not in too bad shape after we got a fire started, but as to grub, that was something else! Next day we had a 21-mile ride back to camp and arrived about 2:00 P.M. completely famished and pretty well 'stove up' from too much riding too soon. It rained or snowed during our entire stay, and we ended up with better than a foot of snow. Riding up and down mountainsides, across down timber, and over loose rocks with a foot of snow on the ground is an experience that is about as crippling as anything I have encountered. I guess I am just too old!" Now, now, Vert, it was nothing but one of those minus-three-sigma deviations, and they do happen every once in a while! As he wrote in late October, Vert was about to take off from Bogalusa, La., for Seattle for a Crown Zellerbach board meeting and a tour of three mills on the Olympic Peninsula and Vancouver Island.

Jack Burbank continues to enjoy the Osterville Men's Club. Says 90 per cent of the members are retired, and the once-a-month meetings have become so "desirable," the membership limitation has just been increased from 175 to 200. Geographically, membership is associated with the Town of Barnstable, which includes such communities as Hyannis, Barnstable, West Barnstable, Marston's Mills, Cotuit, Osterville, Wianno, Craigville, and Hyannisport. Jack says his Wianno Golf Club handicap remains at a 12, but that he doesn't play to it except during mid-summer. . . . In late October, **Will Wylde** indicated that he and his wife were planning to time a trip to New York (to see an opera or two at the Met) with the December 7 monthly class luncheon. Will was sorry to have missed the 45th Reunion, but they had just returned from a trip of about four months which included Florida, the West Coast, and many national parks. He says about the only unusual thing in an otherwise standard trip "was due to the fact that my wife's sister is secretary to Jeanette MacDonald and her husband Gene Raymond, and since they were away during the time we stayed in Los Angeles, we were invited to stay at their residence. As you can imagine, it was considerably more luxurious than the usual motel quarters we had at other places on our trip."

On October 14, **Bob Wilson,** as United States Atomic Energy commissioner, gave a paper, "Cornell's Nuclear Facilities and the Atomic Energy Commission Objectives" on the occasion of the dedication of a TRIGA-type nuclear reactor to Cornell University. Following an introduction in which he pointed out that the Commission's number one responsibility is "the development and production of atomic and thermonuclear weapons for the defense of our country," he discussed the use of radioisotopes which have found many different applications and have "contributed much to the welfare and economy of our country." As he notes, they provide "ultrasensitive tracers for all types of biological and chemical systems, including living plants, animals, and humans. The mechanism of many obscure reactions, particularly physiological, is being elucidated by appropriate tracer atoms. They also help industry design better machine tools, mixers, and other equipment." In the United States alone, radioisotopes are being used by about 6,000 leading medical, industrial, and research groups of all types. "In medicine, over one-half million patients a year are receiving direct benefits from new techniques made possible only by the abundant availability of reactor-produced radioisotopes." And in agriculture, radiation, under controlled conditions, is used to develop new crop varieties "by changing the genetic characteristics of the plant," some of which have higher yields or are more resistant to drought or disease —factors that "will help greatly to meet the ever-growing world need for food."

Steve Whitney writes from "Whit's End" in Meredith, N.H., where he continues enthusiastic about his some-years-ago migration from Watertown. He says that he, as one of two or three thousand in attendance at the National Alumni Night dinner at Walker in October, was duly impressed by hearing the voice that started in San Francisco, and in two and a half seconds, was sent to the moon and bounced back to the M.I.T. listeners. . . . He notes that Meredith has become an extremely popular vacation area—a summer town, with an influx of some 20- or 25-thousand, and a winter population of about 2,500. It boasts a waterfront on Lake Winnepesaukee, public docks, launching pads for boats, many shipyards, a fine golf course and three more nearby. Steve says the state is growing, with many new throughways and with 35,000 motor boats now registered in the state. As a matter of fact, he sounds as though he were an active member of the Chamber of Commerce. He says he can see **Peb Stone's** Beaver Island just by looking up the lake. Mail is delivered by a United States Mail boat, as we know from Peb's summer address. Steve said in October he was living quietly up there enjoying friends who come back for a weekend or over night to see the superb fall foliage, then at its height. . . . From the old home town of Lowell, Mass., someone forwarded a "Statement of Condition" report of the Union National Bank of Lowell. Included was a list of directors, and included in the list was one well known in and around the councils of 1916—that's right, Ralph Fletcher!

The governor of North Carolina knows a good thing when he sees it, of this you can be sure, for in October he appointed **Arvin Page** to another five-year term on the State Board of Registration for engineers. Arvin says that with a part-time job such as this plus some part-time work for his old company, the Bahnson Com-

pany, retirement is not too bad. He and Claire have moved to a new address, into an apartment which they think will be ideal if he "can continue to scrape up the rent." The apartment in Winston-Salem is in a new development of about 30 apartments in one story buildings with from two to four apartments per building. Arvin notes: "No one overhead to ——— at 2 A.M. nor anyone below to complain if I want to ——— at that hour!" And why did he move? Here's how he puts it: "I was completely fed up with mowing the lawn and raking leaves. You know, or maybe you don't, here in God's Country everyone who is anyone plants grass seed in March and also in September; consequently lawns require mowing 12 months a year. In addition, most of the trees are oaks which shed leaves from September to January or February. I'm through with all that!" Further, with respect to registrations, he says they had registered **Hy Ullian** a short time before. Says he was tempted to insist on making Hy come down to North Carolina for an examination. He hoped to see Hy.

A June 26 news release from the press room of the American Society of Engineering Education, 1961 Annual Meeting, Lexington, Ky., announced that **Vannevar Bush** (and also Dr. Solomon C. Hollister, dean emeritus of the School of Engineering at Cornell) was on that day to be awarded honorary membership in the A.S.E.E. The release stated: "Dr. Bush, who has made important contributions in the construction of computing machinery, served as head of the Department of Electrical Engineering and as vice-president of M.I.T. before going to important wartime service in Washington during World War II. Later he was president of the Carnegie Institution of Washington. An A.S.E.E. member 38 years, Dr. Bush has made pioneering contributions in the use of college and university resources for government research programs." . . . **John Fairfield** reports an extensive 38-day coverage last summer of some of our midwestern and western states, "seeing friends and scenery in Utah, Colorado, Wyoming, Illinois and Indiana, educating Mrs. F. on the wonderful mid-continent," and apparently helping her collect stones, her latest hobby. But he didn't say whether he put heavy duty springs in his car, as did Vert Young for his rock collecting out West last summer. John is back in the classroom again at Rensselaer.

At the 45th Reunion last June, we had on display a most unusual letter postmarked Rockport, Mass., from a man with a most unusual career—**Morris B. Sanders,** M.D. who spent one year with us in Public Health (Course VII) before going on to complete his work for his M.D. at Harvard in 1919. Subsequently he spent 21 years of his medical and public health career "far outside the concentrated cosmic intellectual radiations along the Charles River." In 1921-23 he was resident surgeon and lecturer in surgery at the Siang-Ya (Yale-in-China) Medical School and Hospital in Changsha, China. Then from 1932 to 1948 he was stationed in Paris, where, as pioneer of modern anesthesia, he was responsible for the introduction of some American agents (cyclopropane and sodium pentathal); techniques (closed circuits); and practices (more medical responsibilities of the anesthetist toward the patient) in the American Hospital of Paris, Laennec Hospital of the Assistance Publique, and the French Red Cross Hospital, Place des Peupliers. After 1939, he had a number of military tasks as the American Hospital became an auxiliary hospital of the French armies. He was a member of the Commission for Oxygen Therapy of the French Armies, of which Dr. Alexis Carrel was the chairman; after four months in a Nazi concentration camp at Compiègne, France, he was released through the efforts of Alexis Carrel for proposed research on industrial accidents at the American Hospital; he was appointed consultant on sleep and oxygen therapy for the French Foundation for the Study of Human Problems, organized by Alexis Carrel; and he conducted studies of biology and psychology relative to aviation, especially the accident problem. He was appointed the first Public Health attaché of the U. S. Public Health Service to Paris, July through December, 1948, and to Beirut, Lebanon, December, 1948 through July, 1951. Dr. Sanders speaks glowingly of the influence and teachings of Professors Sedgewick and Prescott, and mentions that one of the most effective criticisms in his educational years came from Professor Prescott when he said: "Sanders, one of your difficulties to overcome is that you think if you see something in print, it must be true." Since 1932, one man, Welles Bosworth, '89, has had a tremendous influence on his ideas of Franco-American relations and two others, Vannevar Bush and Norbert Wiener, have had much indirect influence "on the reorientation of my thinking" since he was in a concentration camp in Compiègne. He mentions particularly Van Bush's "How We May Think" in the July, 1945 Atlantic Monthly and Dr. Wiener's book "Cybernetics."

As of the date of his letter (May 31, 1961), he was having a "special correspondence with Welles Bosworth to commemorate the 100th anniversary of Tech and the 150th anniversary of the Massachusetts General Hospital, both of which institutions played an important, even vital, role in our respective lives during the formative years. . . . Welles Bosworth is now living and active in his 93rd year in an architect's dream-come-true—the Villa Marietta at Vaucresson, just outside of Paris. He is the "dean" of the American Colony of Paris, Mr. Rockefeller's resident consulting architect for the inter-war restorations of Rheims and Versailles, as well as the super-ambassador for Franco-American relations, and the founder and patron of the University Club of Paris!" Dr. Sanders has been in "a more or less enforced retirement" since 1951, engaged in research on several highly significant problems on international relations. We hope to see him at the 46th Reunion in June and hear more about his illustrious career.

Percival Gooding retired September 1 after 39 years' service with the Strathmore Paper Company, and 22 years as technical director at the West Springfield, Mass., headquarters. According to the September 2 issue of the Springfield paper: "Gooding has seen Strathmore's technical laboratory grow from four men to its present staff of 27. In his position as technical director, he has been in charge of the company's research fellowship at the Mellon Institute in Pittsburgh, Pa." After graduation he spent one year as an assistant in the theoretical chemistry laboratory at Tech, then joined the Eastern Manufacturing Company—now Eastern Division of Standard Packaging Corporation—at Bangor, Maine, as a chemist. World War I interrupted his work there. "He joined the Chemical Warfare Service, doing research on gases and signaling devices at American University in Washington." After the war he returned to Eastern and in 1922 joined Strathmore at Woronoco as a chemist. In 1939 he was named technical director and moved to the West Springfield headquarters of the company. "Gooding is a member of the American Chemical Society, the Technical Association of the Pulp and Paper Industry, a charter member and founder of the Western Massachusetts Section of the American Society for Quality Control."

A colorful letter from **Francis Stern,** covering his and Mrs. Stern's European trip from July to October, was read with interest by a number of, may-we-say, gentlemen at the New York monthly 1916-1917 class luncheon in November, at the M.I.T. Club of New York Club rooms, Hotel Biltmore. The 16'ers with only Evans, Stone and Dodge were outnumbered eight to three by the 17'ers including Proctor, Hunter, Lane, Morton, Loengard, Neuberg, Sullivan, and Sylvander. The Sterns first flew to London, had a week of theatre and visiting, then on to the Cotswolds and two Shakespearean plays at Stratford-on-Avon. Next to Salzberg in Austria for the Mozart Festival, where six "magnificent operatic performances and four concerts" filled 11 days, with browsings and quiet in between. There followed a five-day motor trip through the Southern Tyrol, including a crossing of the Grossglockner—one of Austria's highest mountains. In Athens, they enjoyed the Museum and many of the things that good friend **Walt Binger** had suggested they do, then had an eight-day trip on the "Stella Maris" through the Greek Islands, each with "its own wonderful combination of mythology, history, and reality," with their most distant point, Istanbul. Next to Barcelona for a week, then a flight to the island of Majorca and a week in Palma there. Francis has made recommendations before that have been found worthy by other 16'ers, and now Palma and the Hotel Fenix have his latest high recommendation. "It is a charming spot climatically and from the point of view of comfort the new Hotel Fenix offers everything one could desire. It is full of English people, for the living costs in Majorca are extremely low and based on the English pound; the English are able to have first class accommodations at a minimum price." Back on the mainland and a trip through southern Spain, Francis expressed amazement at the bountiful crops of rice and "a completely new in-

dustry now but five years old; namely, cotton." And of all places, they spent three or four days at Torremolinas, a suburb of Malaga, where the **Irv McDaniels** had been living contentedly for months and months, yet through lack of information, there was no get-together. Francis mentions other places visited. Grenada, Cordova, and Seville where they were able to visit the palace of the Duke of Alba. Should any reader want suggestions or ideas on just where to go and stay, they need only contact Francis (West Hartford) for particulars.

The **Harold Mills** returned home to Mountain Lakes, N.J., on November 12 after a six-week motor trip to the West Coast. A principal objective was the exploration of southeastern Utah, but the proximity of two daughters in California gave sufficiently compelling reasons to go all the way to the Coast. . . . This concludes the column for the present. We continue to look forward to receiving just a bit of information from all those who enjoy reading these bits of information. If it happens that you have not been quoted during the last six months, now is the time to send in your bit. And finally, the very best of good wishes to you, from all your class officers, for a happy and healthful New Year!—**Harold F. Dodge,** Secretary, 96 Briarcliff Road, Mountain Lakes, N.J.

'17

45th Reunion News Release: The indefinite status of boating and fishing reported in December's Class News has been taken care of; **Jack Wood** has agreed to plan all necessary facilities for the entertainment of classmates and wives who want to "see the sea." It is not certain that Jack will have the "Nautilus" tied up at our special dock, but it is quite certain that boats will be available for fishermen and sailors.

The Trenton, N.J., Times reports that **Harold Perry** of Yardley, Pa., is using some of his retirement time in the interest of Recording for the Blind. He spoke late last summer before the Zonta Club of Trenton, N.J., as a volunteer representative of the Princeton Unit of Recording for the Blind, Inc. Harold is also chairman of the board of the Mercer Street Community Center which is supported by the Society of Friends of the Hanover Street Meeting. . . . The Wall Street Journal of October 18 had an article on "Cities' Rubbish Woes." 'With rising incomes 'we can buy more and throw more away,' says **Harrison P. Eddy,** Boston consultant on refuse problems. 'Many more items are wrapped these days, newspapers are thicker, magazines are bought in greater volume, toys are easy to break and, in general, the life of our goods is shorter than those of our grandfathers.'" . . . **G. Dana Spear** writes: "Hi! we're on vacation from Santa Monica to look over the southwest desert. I saw **Claude H. M. Roberts** at the reunion of World War I combat pilots in Dayton last June. He was in good condition, and looked about the same as in 1916. I have not retired yet and expect to keep right on working, since my employers, Gilfillan Brothers, do not hold strictly to the 65 retirement rule."

Dud Bell sends this note from London, England: "We had a great experience this fall sailing among the lakes and canals in Holland. Our 35-foot boat was too big, but I managed O.K. Then, we took the usual motor drive of about 3,500 miles, which was really too much to cover in six weeks. Someday I'll ease up. I'm hard at work on a skit for the reunion." . . . **Frank Peacock** writes from Wilmette, Ill.: "I had a wonderful two-and-one-half months in Europe, from May to August this summer. It gave me a taste of loafing that I have not gotten over yet. I am looking forward to the reunion next summer." . . . On October 26 the Associated Industries of Massachusetts presented its president with a tray inscribed as follows: "**Raymond H. Blanchard,** President, Associated Industries of Massachusetts 1959-1961: Able industrialist, distinguished director of Massachusetts corporations and banks, tireless community servant, inspired leader of men, ardent champion of private enterprise, and highly resourceful president of this association in the period of its greatest growth; these stimulating attributes have won the great admiration and lasting friendship of the A.I.M. Board of Directors, October 26, 1961." . . . **Dick Lyons'** secretary writes from Houston, Texas: "I thought you would want to know that Mr. Lyons is in St. Joseph's Hospital for surgery at this time but expects to be home the first part of next week" (November 6).

We are advised of the death of **Edward W. Rounds** of Doylestown, Pa., on May 2, 1961. Edward graduated from Course II, Mechanical Engineering. He came from Tacoma, Wash., and while a student at M.I.T. he was active in the Electrical and Mechanical Engineering Societies, was night editor of The Tech, and was captain of the Varsity Wrestling Team. During World War I he was active in the Navy and in naval aviation, being assigned finally to the Bureau of Construction and Repair in Washington, D.C.

Our class president continues to make headlines. The following appeared on the editorial page of the Chicago Tribune on October 10 under the heading: "Well Directed Shaft." "A man with an ironic turn of mind who happened to possess the only synthetic silk purse ever made out of a sow's ear has decided, appropriately enough, that this curiosity should be permanently on display in Washington. The purse, owned by **Raymond Stevens** of Cambridge, Mass., president of an industrial research company, has been accepted by the Smithsonian Institution. Around 1920 somebody intent on proving that Jonathan Swift was incorrect when he said the feat was impossible, induced Wilson and Company, the Chicago packers, to collect 100 pounds of sows' ears. These were reduced to a glue which, after several chemical transformations, was converted into a kind of silk, from which the purse was hand woven. Mr. Stevens has maintained a discreet silence about his motives in sending the purse to Washington. Contemplating various contemporary statesmen, he may have decided that his trinket was not so uncommon as might be thought. Or he may have decided, from observation of the legislative process, that Washington is the natural center of the industry dealing with the conversion of sows' ears into silk purses."

At the Institute of Radio Engineers Conference in Philadelphia on September 14-15 (Conference on Technical-Scientific Communications) Ray Stevens gave the Management Keynote address on the subject: "Bottoms Up!—Communications Flow in R & D." . . . Perhaps some of the class grandfathers may have observed a situation similar to the following: They were having dinner with some friends. Their small grandson was having trouble cutting his meat. "Are you sure you can cut your meat, dear," asked the hostess. "Oh, yes, thank you" he replied. "We have it as tough as this at grandpa's house lots of times."—**W. I. McNeill,** Secretary, 107 Wood Pond Road, West Hartford 7, Conn.; **Stanley C. Dunning,** Assistant Secretary, 1572 Massachusetts Avenue, Cambridge 38, Mass.

'18

The orchestration of these columns is dependent upon the notes which reach the arranger. Without a trickle of information no column can be brought forth, full blown from the secretary's imagination, like Minerva from the head of Jove. The trickle this mid-November is like our rain since late August—hardly a rill. However, the Hartford (Conn.) Times informs us that **Bill Foster,** who is receiving much recognition as the nation's first director of arms control and disarmament, is married to Beulah Robinson, a former Hartford girl. Keep your seats, please. There's nothing new about it. The ceremony took place on May 9, 1925, at the home of her parents, with 200 guests attending the reception. . . . The Alumni Office informs me that **Kun L. Chow** (Course VI) now lives at Passage 485, 2 Route de Sieyes, Shanghai. . . . **Lee T. Chen** can be reached through the Kinching Banking Corporation, 200 Kiangse Road, Shanghai. . . . **Ching-Lieh Wu** at 2-18th Lane, Tsuan Chow Street, Taipai, Taiwan. . . . Via The New York Times we learn that no further items of news will add to the already established record of **D. Lawrence Starr.** He died in Darien, Conn., on October 1. For many years before his retirement in 1953, he was vice-president of E. W. Brown, Inc. In 1954, a year after his retirement, he founded the D. L. Starr Agency in Stamford, in real estate and insurance. He was president of the agency.—**F. Alexander Magoun,** Secretary, Jaffrey Center, N.H.

'19

Bob Insley retired in December, 1958, from the Ford Motor Company, after serving four years as chief engineer at

the Aircraft Engine Division in Chicago. Since that time, he has been an engineering management consultant in Corpus Christi. At the present time, he is setting up an aeronautical maintenance center for the Army in that city. . . . **Larry Gillett** is still officially at 7520 Hampton Boulevard, Norfolk, Va., but reports that he spends summers in New Hampshire, winters in Florida or Arizona, and frequently visits his son and family in Wilmington. . . . **Grant Green** says he leads a quiet country life in Northampton, Mass., and raises Norwich Terriers. . . . **Locke James** is assistant to the president of State University of New York, Agricultural and Technical Institute, at Farmingdale, Long Island. He has a son working in Puerto Rico, a daughter in Pennsylvania, one in Kentucky, and 12 grandchildren.

George Irwin writes that he is retired, plays 18 holes of golf three days a week, attends Rotary regularly, and drove over 8,500 miles this summer visiting his 21 grandchildren. . . . **Reginald S. Hunt** is still in Auburndale, Mass. He writes that "nothing ever happens around here. I spent the month of July in Boothbay Harbor, Maine, as I have for the last 30 years—only this time it was in bed with my second coronary. However, I finished cutting off the dead branches the day before I went to bed". . . . **Charles W. Hyde** writes that he is retired from the Frankford Arsenal where he was chief auditor. He is active in civilian defense, a patron for two Eastern Star chapters, and chairman of the Havertown Branch of the Southeast Pennsylvania chapter of the American Red Cross. . . . An interesting card arrived from **George Halkiopulos,** Athens, Greece. He says, "My latest work is the second edition of a Dictionary of Technical Terms in five languages (Greek, English, French, German and Latin). It is a very useful book to every engineer reading technical books in these languages. A copy of the book is in the library at M.I.T."

Dick Holmgren, one of our members who is still active in business, says that his job as general manager and chief engineer of the San Diego County Water Authority is to meet the water demands of that county which is growing by leaps and bounds. He expects to spend Christmas in Jamaica with his son Richard (M.I.T. '50), who is working on water supply for that island. . . . **George B. Hirsch** is abroad for a year and will not return until the spring of 1962. We will hope to hear about his trip then. . . . **John Hanson** recently acquired his fourth grandchild. He has had several trips this year, a most interesting one being to the sled dog derby at Laconia last year.

Harry H. Mardoian, senior bridge design engineer with the Connecticut State Highway Department for 25 years, died September 12, 1961. He was one of the principal designers of the West Rock Tunnel on the Merritt Parkway.

A new automated water treatment and pumping plant was opened this fall at Elrama, on the Monongahela River, by the South Pittsburgh Water Company. This plant was named for **Ellwood H. Aldrich,** Vice-president and engineer consultant of American Water Works Service Company, an affiliate of the Pittsburgh Company. From the time the water supply is drawn from the Monongahela until it leaves the station as pure water, every phase of the treatment and purification process is under the constant surveillance of automatic controls and sensing devices. . . . New address for **George A. A. Morse** is 59 Hathaway Road, Osterville, Mass. Word has been received of the death of **Sung-Sing Kwan** in Taipei, Taiwan.—**Eugene R. Smoley,** Secretary, 30 School Lane, Scarsdale, N. Y.

'20

Our illustrious classmate, **Harold F. Smiddy,** retired November 1 as vice-president in charge of management consultation services at General Electric Company. Harold joined General Electric in 1948 after having been a partner of Booz, Allen and Hamilton. He served as general manager of the General Electric chemical department in Pittsfield and as general manager of the air conditioning department in Bloomfield, N.J., before being elected a vice-president in 1958 He is well known in the utilities field, having been a director of Ebasco Services, Inc., an executive of Electric Bond and Share Company, and operating manager of West Penn Power Company. We think he has earned some rest and relaxation and wish him many more years of good health and contentment. . . . **George I. Brown** has opened an office as an industrial management consultant in Kalamazoo. He was director of industrial engineering at the KVP Sutherland Paper Company for the past 12 years and before that was in consulting work including service as account supervisor with Booz, Allen and Hamilton. His home is at 1421 Henderson Drive, Kalamazoo, Mich.

Amasa H. Castor still shuttles between Manchester, N.H., and Ft. Lauderdale, Fla., lucky fellow. . . . **Art Dopmeyer** has left Portland, Ore., and gone to New Orleans; his address is 230 26th Street. . . . **Everett Fuller** has moved from Woodbury, N.J., to Richmond, Va., at 8802 Three Chopt Road. . . . **Warren Russell** has moved from Dorchester to Cotuit, Mass. . . . At the first Alumni Council meeting the class was sparsely represented, only **Al Burke** and your secretary being detected. Two of the regulars, **Ed Ryer** and **Jim Gibson,** were in Florida, Ed on a pleasure trip and Jim on business, so he says. . . . **Perk Bugbee** was in Kansas City, or Tulsa or someplace out that-a-way. He still does considerable chasing around in the interests of fire prevention. . . . A Happy New Year to you all. We spent ours with **Buck** and Mary **Clark.—Harold Bugbee,** Secretary, 7 Dartmouth Street, Winchester, Mass.

'21

Happy New Year! **Chick Kurth,** who wears many hats,—our class representative on the Alumni Council, treasurer of the 40th Reunion Committee and vice-president and director of steam and electric operations of Boston Edison,—sent a newsy letter accompanying his report closing the books on our reunion last June. Chick thoughtfully enclosed several clippings about our classmates. He says, in part: "We took a flying trip to Hawaii this summer and spent several enjoyable occasions with **Harry** and Catharine **Field.** Harry has retired from his vice-presidency of Hawaiian Electric Company but is very active in Rotary and other civic affairs. He has a lovely beach cottage, where we enjoyed a swim and family party in his lanaii. Harry's son is manager of the Kauai branch of the telephone company and has a fine family. Both Harry and Catharine were in fine health and spirits and are looking forward to enjoying many years of retirement. Let's hope they come over to the mainland soon again. We also met Mr. and Mrs. Alfred E. Shaw, '22, Course VI-A, who stopped off to visit Harry during their trip around the world." Thanks, Chick. Maybe Harry will drop us a note regularly and tell us about all these world travelers who stop over to see him in Honolulu. . . . It was good to hear from Helier and Graciela Rodríguez, whose long letter from Spain we will print next month.

The directors of Converse Rubber Company of Malden, Mass., announced the election of **Albert H. Wechsler** as president of the corporation. Al had been vice-president and general manager for many years. He is a director of the Hodgman Rubber Corporation, a trustee of Beth Israel Hospital, Brookline, Mass., and a member of the Belmont Country Club. He and Pearl have two married daughters, both Vassar graduates, a married son who was graduated from Harvard, and six grandchildren, including the twins. Remember? . . . Class President **Ray St. Laurent** has prepared a remarkably complete listing of those appearing on the class picture taken on the lawn of the Mayflower Shore Club. When we solve the puzzle of those who modestly hid their good looks, an attempt will be made to publish all the names in these columns. Ray and Helen had an autumn vacation in the north country and marked the occasion by contributing to our stamp collection a full mint set of all the Canadian commemorative stamps issued in the last year. A welcome note says, in part: "We have just returned to Pugwash from a four-day visit to Cape Breton. We made our headquarters at Baddeck, the home of Alexander Graham Bell. The museum is tremendous and what a man Bell was! Some of his ideas are only now being put to use, such as hydrofoil boats. The foliage was gorgeous and the surf a display. We took many pictures."

Class Agent **Larc Randall** has written to all members of 1921 on behalf of the 1962 Amity Fund and his co-Class Agent **Ed Farrand.** With his letter, you received the annual report of the 21st year of the Fund. It's difficult to realize that it has reached its majority. We well remember aiding the struggle of the infant Fund and it is heartening to see it reach such sturdy maturity under your kindly minis-

trations. We note, with pride, the mention of the "highest amount of any Class Gift so far, by the Class of 1921, celebrating its 40th anniversary," and the well-deserved commendations bestowed upon our Reunion Gift Chairman **Irv Jakobson.** Kudos should also be showered upon Special Gifts Chairman **Mich Bawden** for his most effective aid in rolling up that colossal $440,300 gift as of last June. What will it total when the final amounts are tallied next June? Only you and your love for M.I.T. and her part in the future of our young men, our country and our part in world peace and freedom can answer the question. Choose whatever method or medium to express your faith in the Institute and express it as heartily as you can, and as often!

Area chairmen among the leaders attaining high percentages of their quotas for Technology's Second Century Fund are **Ollie Bardes,** Cincinnati, and **Romney Mellen,** El Paso. . . . **William F. Kennedy** of Bethlehem Steel writes that he has moved from Scarsdale, N.Y., to Apartment 11 D-E, 425 East 63rd Street, New York 21, N.Y., no doubt choosing the location to be able to sport that postal zone number! . . . **Eugene W. Rudow,** President of Scientific Supplies Company, Seattle, Wash., says he has moved his home to 6421 West Mercer Way, Mercer Island, Wash. . . . **David O. Woodbury,** having trekked once more from Ogunquit, Maine, to that new home in Scottsdale, Ariz., says that it has now been numbered 11211 North 85th Street.

Saul M. Silverstein was awarded the 1961 Human Relations Award of the Society for the Advancement of Management for his "bold innovations in labor-management relations, for sharing his philosophy of human relations and technique of contract negotiations with our nation's business and union leaders and for his inspiring and leading other to the realization of democratic practices and spiritual ideals." In accepting, Saul remarked that: "Too many people think of human relations as Chapter 17 in a textbook on management. Actually, good human relations is the whole book. We should realize that there are three sides to every question: Your side, my side and the right side." Two unions at Rogers Corporation in Connecticut, of which Saul is president, have recently made him an honorary lifetime member. We have just received a post card from Saul, mailed in New Delhi, India, saying: "Hi! Greetings from India. Am on my ninth U.S.A. mission overseas. Best regards." Saul left in mid-October on a round-the-world tour, for part of which Rigi will join him. His itinerary included London, Frankfurt, Milan, Tehran, then a month in various locations in India, including New Delhi, Calcutta, Madras, Bombay and side trips to such spots as the Taj Mahal. Then off to Rangoon, Bangkok, Japan, Honolulu and home. His mission in India is under the auspices of the U.S. State Department and the Council for International Progress in Management, of which he is vice-president. About twice a week, we are privileged to receive a copy of a six to ten-page closely typed letter, written by Saul to his associates, covering every detail of his travels, supplemented by his discerning witticisms on all he sees and does.

Joe Wenick, Sumner Hayward and **Cac Clarke** attended the fall meeting of the M.I.T. Club of Northern New Jersey to hear Professor Hans Mueller of the Institute's Physics Department speak on "Tensor Optics." . . . Joe says his younger son was graduated from Brown last June and is now at California for his master's. Sumner and Betty recently had **Norm** and Betty **Patton** as their house guests and are now planning a return visit to Wilkes Barre, Pa. Sumner also attended the National M.I.T. Alumni Night in New York, which was tied in to a network of similar meetings in some 50 cities. He reports the local 1921 contingent comprised: Jack Barriger, Morris Hart, Sumner Hayward, Irv Jakobson, Joe Wenick and Dick Windisch. . . . Start the New Year right. Write to your secretaries!—**Carole A. Clarke,** Secretary, International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N.J.; **Edwin T. Steffian,** Assistant Secretary, Larsen, Steffian, Bradley and Hibbard, 711 Boylston Street, Boston 16, Mass.

'22

Think of June in January. Think especially of Thursday, June 7 through Monday, June 11 (that's 7 come 11) at the New Ocean House, Swampscott, Mass. Prizes will be distributed, awards conferred and corny jokes having to do with bald heads will be faintly appreciated. He who laughs last will be the one who stays up latest. Prepare yourself and your family for a gala celebration at our 40th Reunion. If you fail to recognize some co-adventurers don't feel conspicuous; they look just as young as you. Good cheer will be the order of the daze. Bring along a survival kit, and we will provide the shelters. Forget your lessons in mesons and prepare to trade past experiences with your classmates.

A report from the Alumni Council meeting of star-studded attendance included Parke Appel, Fred Dillon, Oscar Horovitz, Bob Brown and Yardley Chittick. Yard and Ruth got in their usual quota of sailing this past summer and sold the "Hokuloa" with the provision of a two-week charter for next year. . . . **L. F. Hickernell,** Vice-president, Engineering of Anaconda Wire and Cable Company, spoke to the corporation of the Polytechnical Institute of Brooklyn on cable engineering. An expanded theme on this same subject was published in the October issue of "Electrical Engineering." . . . **Oscar Horovitz** is quoted in the papers as the famous amateur movie maker of Newton, who has won every top award accorded non-professional cinematographers. Oscar has made a great number of films for charitable and educational groups including the Red Feather campaign and M.I.T. . . . Among those listed from the Alumni in Arthur D. Little, Inc., is **Frank N. Houghton,** Secretary-Clerk of the Corporation.

We extend sympathy to the family of **Kenneth G. Hamilton,** retired chief engineer of Calculagraph Company of Harrison, N.J. Memorial services were held in Bethlehem, Conn., November 4. . . . Our sympathies are also extended to the families of **Joseph K. Godfrey,** Tenafly, N.J.; **Harold W. M. Secord,** Newton, Mass.; **Mrs. Edward C. Lukens,** Philadelphia, who was **Frances B. Day;** Colonel **H. Mortin Cronk,** West Hempstead, N.Y.

New addresses have been received for **C. Ford Blanchard,** Arlington, Va., and **Rudolf H. Blatter,** Arlington, Va.; **Brian Mead,** Scarsdale, N.Y. Among those attending National M.I.T. Alumni Night in Walker were: Oscar Horovitz, Edward E. Bigelow, Theodore Elliott, John F. Hennessy, George R. Hopkins, Edward A. Larner, Marjorie Pierce, Robert Tonon and Parke D. Appel. Among those attending in Buffalo was—**Whitworth Ferguson,** Secretary, 333 Ellicott Street, Buffalo, N.Y.; **C. George Dandrow,** Assistant Secretary, Johns-Manville Corporation, 22 East 40th Street, New York, N.Y.

'23

Edward McSweeney, Vice-president and Treasurer of the Perkins-Goodwin Company, was the opening speaker at the General Session of the Printing Industry Association's convention held in Pittsburgh in October. Among other things he said: "Management education is the cheapest insurance any business can buy. . . . It is difficult to believe that in the middle Thirties only a small handful of men were interested in management education. . . . The P.I.A. was the first trade association to embrace the management education movement. Today it is hard to find any trade association without a management development program." Mr. McSweeney traced the growth of the management education movement, calling it the education which fits a man for the tasks of his occupation. "There is much evidence that the management movement is just getting underway," he said. "Currently there are well over 175 colleges or universities with full schools of business with enrollments of over 300,000, and it is rising faster than any other form of education. I know that this is just the beginning. . . . Any company that wants to survive must seriously embrace management education. Management must be able to upgrade unskilled workers while at the same being able to deal wisely with more educated and skilled employees."

Joel Y. Lund, Vice-president of the Warner-Lambert Pharmaceutical Company, added another honor to the many he already holds, when he was re-elected president of the 80-year-old Proprietary Association in June. . . . **William Webster** is serving on the Board of Directors of Arthur D. Little, Inc. . . . **Bernardo Elosua** (Course I) announced the marriage of his daughter Lucia to Guillermo Barragán on October 7 at Monterey, Nuevo Leon, Mexico. . . . **Bernard Lewis,** President of Combustion and Ex-

plosives Research, Inc., of Pittsburgh, Pa., was awarded the 1960-61 Gold Medal of the Society of Thermo-Technologists in Italy at their meeting September 26 in Turin. The award is conferred biennially upon an outstanding scientist in the field of thermotechnology. Special recognition was made of Dr. Lewis' services as co-founder and president of the Combustion Institute. The Institute, an international, professional society of scientists engaged in fundamental research on combustion, has sections in 17 countries.

We wish to announce the following address changes: Major General **Carroll H. Deitrick,** 13 Maple Lane, Watsontown, Pa.; **Ernest E. Fairbanks,** 3961 Sutherland Drive, Palo Alto, Calif.; **Lawrence T. Haugen,** 1910 Carrollton Road, Annapolis, Md.; **Howard F. Russell,** Christian Hill, R.F.D. #1, Milford, N.H.; **John W. Voelcker,** Wych Elms, Thorpe Green, Egham Surrey, England.—**Herbert L. Hayden,** Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass.; **Albert S. Redway,** Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.

'24

It's Banker **Meeker** now, or rather it will be in a day or so, depending on when your Review arrives. On January 1, **Dave** begins a three-year term as a director of the Federal Reserve Bank of Cleveland. The announcement calls him a "Class B director." Your secretary is not familiar with these things, but since when has Dave been class B in anything! The announcement also lists a few accomplishments, other than being Hobart's president, which are probably unknown to most of you. He is: president of Trojan Farms, Inc.; director of Monarch Machine Tool Company; director of Chain Belt Company; Vice-president and director, Cincinnati Post, American Ordnance Association; Vice-president, Miami Valley Council, Boy Scouts; member, Region Four Executive Committee, Boy Scouts; and member and past president, Troy Rotary Club.

Among the clippings is one from The New York Times, a capsule history of **John F. Hennessy.** The reason for its publication is not apparent, since it's not pegged on a news item, but maybe it's because of his striking portrait by The Photographer of Men. Really is a corker. There were several items not known to your secretary at least, such as Jack's presidency of Lincoln Hall, a Catholic school for delinquent boys. We did know that John F. Jr., '51, is working with his father in the firm of Syska and Hennessy, but we didn't know that son Paul is a brother in the order of Irish Christian Brothers and is now studying in Rome for a doctorate in theology. And while we did know that Jack is in the middle of designing the mechanical and electrical systems for the Lincoln Center, maybe you didn't.

"Union Carbide Names Member of Appropriations Committee," is the head of a release which tells about Vice-president **Hartselle D. Kinsey** being given additional duties. "Concerned primarily with the planning, organization, and evaluation of the various technical programs of the Corporation," Sox has now been appointed a member of the appropriations committee. Sounds like a good deal, as though he can now dream up a project and then finance it all by himself. . . . From Cleveland comes word that **Bill Robinson's** daughter, Jane, was married in October to Charles Owen Wilson. They are living in Wilmington, Del.

The October class luncheon at the M.I.T. Club of New York brought out nine; Messrs. Bagby, Blaisdell, Cardinal, Crafts, Hill, MacCallum, Schooler, Scott and Stevens. Just to refresh your memory, these luncheons are held on the second Wednesday of each month. If you're in town at noon of one of those days, you'll be most welcome. Hotel Biltmore, you know. **Paul Cardinal,** by the way, was puffed with pride over the arrival of grandchild number 10. . . . The **Amezagas** have left Mexico and taken up residence in Barcelona, Spain. . . . And **Lynn P. Marsh** has deserted Indian Bowl at Groton, Mass., for the seacoast life of Rockport. It's not known whether he is going in for lobstering or art, the two main interests of the town.

We have the unhappy task of reporting three recent deaths: **Alan D. Goodall** in Fort Myers; **John H. Lewis** in Cincinnati; and **Hugh M. Phinney** in Marshfield Hills, Mass. No further details are available.

Forty years ago at this time, we were just completing our second Christmas vacation. Have you any idea what you were doing? If you were in the Musical Clubs you were just returning from a 2,500-mile trip that took you as far as Chicago. Maybe you were awaiting the results of Tech Show tryouts. **Walt Groce** and **Bert Read** made the cast of "The Sacred Cow." Prospects for the swimming team looked good, with **Johnnie Henninger** a standout in the plunge. The gym team practiced all during vacation, with **George Anderson** doing "exceptionally good work" on the mats. "Voo Doo" was getting ready to produce its Newspaper Number. **Dent Massey** was preparing for his forthcoming nuptials in early January. . . . Maybe you were standing in line to thrill to "The Sheik," playing at the Fenway. Harold Lloyd followed it in "I Do." Or possibly you were at the Colonial to see Fred Stone and the Six Brown Brothers in "Tip Top," or E. E. Clive in "Charley's Aunt" at the Copley. Probably none of us attended the Alumni Council meeting in December to hear Professor Sam Prescott discuss his research on the diet of moths. He proved conclusively that they can live without "vitamines." Maybe you took in some of the local points of interest suggested as vacation fare by "The Tech": Bunker Hill Monument; the glass flowers; Longfellow's home; or a ride along Atlantic Avenue on the El. Or maybe you were just recuperating from the pre-Christmas exams, curled up in an easy chair like the Lounger, laughing over the big Christmas number of LIFE. . . . Well, whatever you were doing, 40 years is a long time, and right now you probably haven't the foggiest. So, from your class officers, our hope that this Christmas season has been a good one for you, and that the year ahead will bring you many of the things that make life worthwhile.—**Henry B. Kane,** Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

'25

M.I.T.'s coast-to-coast rally on Thursday, October 19, provides several news items, most of them reaching me from **Garvin "Chink" Drew** who was present at the New York meeting on that night, as were a number of other 1925 men. Chink very kindly supplied me with the following information concerning those present: **George "Count" Blonsky** and his wife were in New York on this particular occasion, although "The Count," now associated with Parson and Jurgen, spends much of his time traveling the globe in various engineering selling capacities, and speaking five, six or more languages. . . . **Fred Sommer** is working with the Investors Planning Corporation. . . . **Ray Wheeler,** who is executive assistant in the long lines department of A. T. & T., has traveled over much of the world, and has spent a considerable amount of time in Japan. . . . **Frank Corliss,** an engineer for General Electric International, is also a world traveler and was present on this occasion with his wife. Also in attendance was **Henry Bacon.**

On the same evening, the meeting in Denver, Colo., was arranged by **Ben Oxnard;** and at Allentown, Pa., it was my pleasant duty to speak to the Alumni and wives numbering some 40-odd. Among the group present there was **Malcolm S. Blake,** one of our classmates. . . . A few days ago **Bob Read** dropped into my office, and we had a very pleasant chat. He is president of Gordon Company, Inc., in Norwalk, Conn. . . . It is my hope that whenever any 1925ers are in town they will drop around to my office at the Institute. The door is always open to them and it would be my pleasure to meet with them.

Among those whose names have appeared in the news recently is **Harry J. Rowley** who has retired from the New Brunswick Electric Power Commission, with headquarters at Fredericton, New Brunswick. He is a native of that province; and after obtaining degrees at several Canadian universities, he attended M.I.T. with the Class of 1925, and later received his Ph.D. at McGill in 1929. Subsequently, he was director of research and development for Abitibi Power and Paper Company, Anglo-Canadian Pulp and Paper Co., Ltd., and the Anglo-Newfoundland Development Company, Ltd. During the war he was director of operations and production manager of the Allied War Supplies Corporation, a Crown company with wide responsibility for chemicals and explosive production. Dr. Rowley returned to his native province in 1944 as chairman of the resources and

development board. Since then, his knowledge, experience, energy and drive have been devoted to the promotion of the industrial and economic expansion of New Brunswick.

Two other classmates who are on the speaking circuit include **Willard Allphin,** who spoke on October 2 at a joint meeting of the Illuminating Engineering Society's Western Massachusetts Section and the Massachusetts Society of Optometrists' Berkshire District. The subject of his talk was "Discomfort Glare." Bill is with the Sylvania Lighting Products Company in Salem, Mass., and is an expert on optics and illumination. . . . According to the New York Times, **Maxey Jarman** was one of the principal speakers at the 33rd annual Boston Conference on Distribution held at the Statler Hilton Hotel on October 17.

News has reached this office through the Alumni Office of the death of three members of the Class of '25. **Kenneth L. Stelle** died on January 9, 1961 in Largo, Fla., where he was the real estate representative of the Shell Oil Company. . . . **Felix Winsor** passed away on September 8, 1961 in Boston, Mass. He was a chemist with the Keystone Manufacturing Company. . . . **Milton B. Barba,** field engineer with Leeds and Northrup Company in Philadelphia, died on October 3, 1961.—**F. L. Foster,** Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

'26

So few recent issues of Class News have been written at Pigeon Cove that I seat myself before the fireplace prepared to start, only to find that my folder of notes is in my briefcase at the office. However, I do have the current month's clippings and at Pigeon Cove, it's easy to ad lib. I haven't mentioned our St. Bernard, Heidi for quite sometime, nor do I believe I have ever told you how excited she gets upon seeing a cat. Recently, Ruth wanted a photograph of Heidi, and while I was taking the picture, a cat strolled by in the distance, arousing Heidi to the best pose possible for her picture. The other evening we had another experience while taking a bedtime stroll. When on the leash, I usually go where Heidi wants to go. In the darkness, she made a quick pull toward the bushes, and I heard a slight hiss. A split second later, I realized that this time it was a wood pussy and the only thing between me and the skunk was Heidi's face. I'd never been so close to the odor and at that distance, it is like a strong acrid chemical, nothing like the familiar skunk odor. I thought Heidi had gone wild as she dragged me over a zig-zag course, but I got her home and into the pen and immediately called the veterinary. Dowse her with tomato juice was the remedy—then rinse it off in a half-hour. We corralled all the tomato juice in the neighborhood and gave her the treatment, and it's marvellous. Although she did not exactly smell as though she had a drop of Chanel 5 behind her ear, she was cleaned up sufficiently by midnight to be allowed to spend the night in the cellar. Believe it or not, she still looks for trouble in those bushes, but when we go walking, I now carry a flashlight and stay near the center of the path.

But let's get back to class business. Here's some news about **Jack Kimberly.** John R. Kimberly has been elected a director of Corning Glass Works, Corning, N.Y. Kimberly is chairman of the board of Kimberly-Clark Corporation, Neenah, Wis. He is also chairman of the board of Spruce Falls Power and Paper Company, Ltd., and a director of the First National City Bank of New York, Wisconsin Telephone Company, Spaulding Company, Valley Iron Works, and the First National Bank of Neenah. He is a trustee of Lawrence College, the Rockefeller Foundation, and the Episcopal Church Foundation. . . . **Ed Huckman** has also made news this month. Edward R. Huckman has been named general sales manager for the Foxboro Company, Ltd., according to an announcement by J. H. Bolton, managing director. He will have charge of all industrial instrument sales activities for the Montreal firm and its branch offices in St. John, Toronto, Sudbury, Port Arthur, Edmonton, Calgary and Vancouver. For the past three years he has been assistant field sales manager for the United States sales organization. . . . **Bob Dawes** sent me a clipping from the Boston Globe indicating that **Bill Edwards** is still promoting his perpetual calendar. The article was a feature U.P.I. story and told all about the calendar as we have heard before; i.e., the same calendar could be used year after year. The occasion for the news story was the introduction of Senate bill #2500 to provide for the adoption of the "Perpetual Calendar" invented by one of his Hawaiian constituents, Dr. Willard E. Edwards of Honolulu. Bill, we admire your persistence over the years. The calendar looks like a wonderful idea to us.

I have delayed the sad news and will let you hear it in a letter I have just received from **Martin Walter.** "Dear George, I was deeply shocked to receive a note yesterday from Molly **Doolittle** saying that **Jerry (Edgar J.)** unexpectedly passed away in his sleep Monday, October 23. She has asked me to let his M.I.T. friends know, and would like to have something in The Technology Review. Attached is copy of a clipping from The New York Times of October 25 which you might find helpful. If there is anyone else who should be notified, please let me know and I will be glad to do so. Although Jerry and I saw each other infrequently of late, he was a very close friend, the two of us having gone through prep school, summer camp and Tech. together. He had the ability of making any group he was with more enjoyable, and I know we will all miss him. He valued his M.I.T. associations very highly, and Molly writes that he did so enjoy the reunion in June. Sincerely, Martin." This sad news makes the third classmate we have lost since reunion: **Dick Lee, Marron Fort** and now Jerry. For the class, I extend our sincere sympathy to Mrs. Doolittle. For those of you who wish to write her, the address is 167 Overlook Terrace, Roslyn Heights, N.Y. . . . Your secretary is still looking for that note from YOU—Remember, a message on a postcard is all that is needed. May 1962 bring health and happiness to all of you.—**George Warren Smith,** Secretary, c/o E. I. Du Pont de Nemours and Company, 140 Federal Street, Boston, Mass.

'27

Our most important news item this month is in connection with our 35th Class Reunion. We are delighted to announce that we have finally succeeded in getting Oyster Harbors Club, Osterville, Mass., for this event, which will be held June 8-10. We know that everyone will make a special effort to be present. A lot of work will go into the planning. **Glenn Jackson** will be chairman and **Bob Bonnar,** treasurer. You will be hearing more about this from time to time but, in the meantime, now that a definite reservation has been made, you can make your plans accordingly. We estimate that 75 to 100 members of the class will be present. The clubhouse has ample accommodations for this number. In all probability, the majority will arrive some time on Friday, June 8, but those who cannot make it until Saturday, June 9, will be equally welcome. Many will probably leave Sunday afternoon, but those who wish to can stay Sunday night. All arrangements are being completed for golf, tennis, horseshoes and fishing. You will hear directly from the committee and be asked to express your special interests. If the majority want a clambake Sunday noon, this will be arranged. If the clambake is programmed and the weather should turn sour, it will be moved indoors. The rates are to be $19 per day, per person (two in a room), and $24 daily, single occupancy. This is all American plan. After much soul-searching, the committee has decided to stay with our tradition of making this a stag affair, but there will be plenty of room in nearby hotels and motels for wives who come along on the trip. I think that our class has solved the formula for happy and heartwarming reunions, and the use of the same formula in 1962 promises another wonderful get-together; those who have not attended before should make a special point of coming to this one. The old-time attenders will certainly want to make a repeat performance out of the 1962 Reunion.

Major General **F. E. Glantzberg,** U.S.-A.F. (Ret.), headed the steering committee for Savannah's 1961 Christmas Parade, which was co-sponsored for the fifth consecutive year by the Savannah, Ga., Chamber of Commerce and the Savannah News-Press, Inc. The parade marked Santa Claus' first official visit to Savannah for the holiday season, and was held on Friday, November 24, the day following Thanksgiving.

Last month we reported the death on September 15 of Captain **Jerome F. Donovan,** but had no specific details. At the time of his death, Jerry was a trustee of the board of a Connecticut bank. A native of New Haven, he graduated from the

U.S. Naval Academy in 1920 and took a master's degree at M.I.T. He is survived by his wife, Charlotte, three sons and two daughters, all of Weston, and a sister, to whom we extend our deepest sympathy.

M.I.T. Alumni have given generously and with increased interest to our annual Alumni Fund. The 1961 Alumni Fund totaled $575,596, second highest in our history and only 15 per cent less than the record breaking year of 1960. With the help of the Alumni Fund, M.I.T. is able this year to give substantial scholarships to 44 deserving students. It has also provided the necessary funds for a dining hall at Burton House for 600 students, now in use. According to the report just received covering "Contributions to the Alumni Fund," the class of '27 had the largest total amount of any class ($30,-715.00), except 1911—the 50 Year Class. However, we didn't do as well as we might have in the "Number of Contributors" column; 197 or 37 per cent of our class contributed. Glenn Jackson as class agent has done a good job.

Nathan Cohn, Vice-president, technical affairs, Leeds and Northrup Company, Philadelphia, was recently named president-secretary elect by the Instrument Society of America at its annual meeting which was held in conjunction with the Society's 16th Annual Instrument-Automation Conference and Exhibit. Nat, through this election, is in line to be 1962-63 president of I.S.A., the nation's only technical organization devoted exclusively to the advancement and dissemination of knowledge of all the sciences and techniques of instrumentation and automatic control. A member of the Philadelphia Section of I.S.A. since 1955, and most recently vice-president of the Society's Industries and Sciences Department, he has held many important positions in the society's national structure. In addition to membership in a number of professional societies, Nat is the author of many technical papers dealing with the generation and transmission of electric power, and holds several patents in this field. He joined Leeds and Northrup in 1927, holding various positions until elected a vice-president in 1958.

Every once in a blue moon, the secretary of another class picks up news of a member of a class other than his own and sends it along to the proper place. This recently happened in connection with Fred W. Goldthwait, '05, who sent on the information concerning Samuel B. Smith, '28, as set forth below. Incidentally, Mr. Goldthwait reports that as the graduates become 78-81 years of age, it becomes even more difficult to extract class news from them. Let's just say in our case that we'll all have just nothing but time to write in to the class secretary. . . . Samuel B. Smith was recently appointed chief consulting engineer of Ebasco Services, Inc., worldwide engineering organization, with chief offices in New York City. In his new position, he is directing the work of 1,800 engineers. Sam's promotion followed three years as Ebasco's consulting electrical engineer, a position in which he was in charge of all its electrical engineering work. . . . The following new addresses have been received: **Fordyce Coburn,** 3103 Country Club Drive, Pueblo, Colo.; **Lenvik Ylvisaker,** c/o Continental Can Company, Inc., 633 Third Avenue, New York, N.Y.—**J. S. Harris,** Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

'28

At the fall meeting of the New England District Council of ASTM, held in Natick, Mass., on November 2, your assistant secretary was pleasantly surprised to find three classmates in attendance. They were: **Walter Anderson, Dave Mathoff,** and **Earl Crawford.** Walter is with Simplex Wire and Cable Company, Cambridge, as head of the physical testing laboratory; Dave is principal structural engineer for the City of Boston Building Department; and Earl is vice-president and chief engineer with Green Engineering Affiliates of Boston, a civil engineering firm. It was a particularly enjoyable ASTM meeting. . . . Undoubtedly, there are chance meetings of '28ers that occur from time to time in other places. We would greatly appreciate having news of any such occasions for inclusion in this column. . . . We are under the strong impression that **John B. Russell, Jr.** appeared in a televised demonstration experiment during the General Electric Hour on Sunday, August 13, last. John is manager of the Electronics Laboratory of G.E. at Syracuse, N.Y.

The rest of our report for this month is based on news clippings and releases. One of these dates back to last March 19 and is from the Sunday Telegram of Portland, Maine. There is a photograph of **Ernie Knight** assisting his brother-in-law, James Hartley, in the shop of their inland Marina. The business is located at Lake Sebago and is one of the largest and most complete in that area. We are told that Ernie is enjoying the business greatly. . . . A brief item in the Toledo, Ohio, Blade for August 3, 1961, announces that **Robert Spurdle** has been named patent adviser in the research and engineering department of Sun Oil Company. He joined the company in 1942 as director of its patent division. . . . A news release of the Water Pollution Control Federation dated October 12 describes a talk by **Carl J. Bernhardt,** presented before the 34th annual meeting of the Federation in Milwaukee, Wis., on that date. Carl is regional director of Public Health Engineering, New York State Department of Health. He has been with the Department for 27 years and has had his present post for 10 years. Carl's talk was on the public relations value of "Annual Reports."—**Walter J. Smith,** Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield,** Secretary, 11 Winfield Avenue, Harrison, N.Y.

'29

Sam Levine has been appointed manager of marketing for General Electric's Marine and Industrial Operation headquartered at the Evendale Plant. In his new position he will be responsible for exploring and developing uses for General Electric jet engines and gas turbine engines in the marine and industrial fields. In addition to receiving his bachelor and master's degrees from Tech, he was graduated from the Advanced Management Program of the Harvard Graduate School of Business Administration. Sam joined G. E. in 1930 in the company's Advanced Engineering Program, and has served in a variety of engineering and management positions in G. E.'s Air Conditioning Division in New Jersey. In 1956 he went to Evendale in the Aircraft Nuclear Propulsion Department and served as manager of the Idaho Test Station and as projects manager prior to his recent appointment. . . . Peg and I dropped in on Joan and **Wally Gale** at Melvin Village early in October and learned that they were about to take off on a six-month junket overseas. They plan to be in Japan for two months, then Hong Kong, Singapore, India, and up through the Persian Gulf to the Mediterranean, and an extended stay in Italy.

After reporting last month that **Hank Giles** was heading up the Malden Redevelopment Authority, we learn that he was recently appointed town engineer and superintendent of streets in Brookline, Mass. . . . From Pittsfield, Mass., we learn that **Ken Beardsley** has been made a fellow in A.I.E.E. Ken was cited for his important contribution in the improvements in the magnetic steel annealing processes and in core designs. He had previously received a managerial award from General Electric for work in these same fields. Ken holds numerous patents, and he is a frequent contributor to A.I.E.E. publications. . . . With regret we announce the death of **Ken Gold** on October 15 last. Ken resided in Brooklyn, N.Y.—**Fisher Hills,** Assistant Secretary, 62 Whittemore Avenue, Cambridge 40, Mass.

'30

This month's items are largely garnered from information forms returned by the late "E"s and early "F"s on the class roll. Of the six classmates reporting only one seems to have exhibited unswerving devotion to his major interest at M.I.T. **Russell Fanning,** Course VIII, is a civilian engineer at Eglin Air Force Base, Fla., where he works on the "design and analysis of tests of Air Force devices of various sorts." His daughter, Barbara, graduated from the University of Florida and is now married to an M.D. and living in Arlington, Texas. . . . **Carl Ellsworth** is manager of office utilities at General Electric's Circuit Protective Devices Department in Plainville, Conn. His son, Carl, Jr., is a sophomore and chemistry major at Clark University in Worcester. Carl reports having had "a couple of coronaries" last spring but appears to be recovering satisfactorily. . . . **Tom Emery** is an accountant and tax counselor who both lives and works in Birmingham, Mich. His daughter, Mary, graduated

from the Chamberlain School in Boston and is now employed in the pathology laboratory of the New England Deaconess Hospital. . . . **Les Engler** is dean of administration at C.C.N.Y. He and his wife Doris live in Tenafly, N.J., where he is active in the local Civic and Welfare Association and a director of the Community Chest. His older son, John, graduated from Notre Dame (valedictorian) last June and plans to enter a Trappist Monastery. Younger son, Robert, is a sophomore at Notre Dame and daughter, Ellen, a freshman at St. Michael's College of the University of Toronto. . . . **Elizabeth Rossman Everett** is living in Manhattan and teaching mathematics at the Rye Country Day School. She obtained an M.A. in mathematics teaching at Teacher's College, Columbia University, where she is currently working for an Ed.D. Her son, Edward, graduated from Exeter (cum laude) in '60, but unfortunately elected Harvard over M.I.T. Being an unquenchable optimist, Elizabeth suggests that M.I.T. "may eventually get him, at least for graduate work." She reports having recently seen **Zareh Sourian** and **Frances Swarti Frazier.** . . . **Ernie Fell** is practicing medicine in Fall River, Mass. His son, Ernest, Jr., graduated from Brown and daughter Nancy is presently attending Roanoke College. . . . Had pleasant chats at the October S.C.F. dinner with **Dave Buller, Gil Cox** and **"Wede" Wedemeyer.**

This month it is regretfully necessary to report the passing away of another of our classmates. On October 5 **Jess Billings** died of a brain cancer. At the time of his death Jess was division plant supervisor of the western area of New York for the telephone company for which he had worked since graduating from M.I.T. During W.W. II he was a member of the 99th Signal Battalion which saw duty in the Southwest Pacific area for two- and-a-half years. Near the end of the war he was transferred to 6th Army Headquarters and promoted to the rank of major. He was awarded the Legion of Merit by General Walter Kreuger for meritorious conduct and outstanding service in the construction of communication lines throughout the Southwest Pacific. He and his wife Norma lived at 51 Garden Wood Lane, Kenmore, N.Y. Their daughter Dorcas graduated from Vassar last June and is teaching in Tonawanda. Son Craig is in elementary school.—**Gordon K. Lister,** Secretary, 530 Fifth Avenue, New York 36, N.Y.; **Ralph W. Peters,** Assistant Secretary, 249 Hollywood Avenue, Rochester, N.Y.; **Louise Hall,** Assistant Secretary, Box 6636, College Station, Durham, N.C.

'31

Ed Worden, in last month's notes, said he would be in England on business and for a short vacation and so you would hear from his "assistant." Ed has written from England but apparently hasn't been there long enough to find a London equivalent of the Monthly Class Luncheon at the M.I.T. Club in New York, one of his favorite spots for gathering news.

Dr. **James B. Fisk,** who is now president of the Bell Telephone Laboratories, was quoted October 25, in an article in the Providence, R.I., Bulletin, headlined "Head of Bell Phone Labs Sees U.S. Tests Justified." The article said that Dr. Fisk, "who grew up on the east side of Providence," headed the American delegation in the 1958-59 nuclear test ban conference in Geneva. He was asked if the red super-blast on Monday constituted a signal for the United States to resume full testing of its nuclear arsenal. He was quoted as saying "Russia's big boom this week was depressing and gives America some grounds for carrying on its own tests of nuclear devices . . . It seems that with the Russians having conducted a very lengthy series of 20 or more tests of weapons and, presumably, of weapons effects, we must correspondingly do whatever tests, whether underground or in the atmosphere, are necessary to keep our military knowledge and our military strength strictly up to date." Dr. Fisk was at Brown University for three convocation lectures. His son, Samuel, was graduated from Brown in June and is now at the Columbia University School of Business. Two younger sons are at Harvard College and Philips Exeter School. The report said that Dr. Fisk was telling Brown students that negotiations can be productive if we intelligently analyze the kind of people we're negotiating with. He was quoted as saying, "Let's be unafraid to offer these things which can be areas of understanding. What's the alternative?"

The Bridgeport, Conn., Post had a column on Captain **George C. Humphreys,** Course XV. He has succeeded to the post of inspector of Naval Material in the U.S. Navy offices at 181 Middle Street. Prior to his naval career, Captain Humphreys worked in the Boston office of Fairbanks Morse and Company from 1932 to 1939 and worked in their engineering department. In March, 1941, he was transferred to Washington, D.C., to open a new branch office for the Buda Company. Upon entry into the naval service he was assigned to the Bureau of Ships in Washington, D.C. In 1945 he transferred to the regular Navy, continuing his duties in the Bureau of Ships until 1948, at which time he was transferred to the Naval Shipyard at Portsmouth, N.H., as the assistant repair superintendent for the overhaul of submarines. He served there until 1951. From 1951 until 1954, Captain Humphreys was assigned to duty as laboratory officer for the Internal Combustion Engine Laboratory at the U.S. Naval Engineering Experiment Station, Annapolis, Md. From 1954 to 1957 he served a tour of duty in the Office of the Industrial Manager, Ninth Naval District, and Supervisor of Shipbuilding, Chicago. He went to the Washington duty from there. Since his biography, included in the news item, had not been among those appearing in the 25th Reunion Class Book, it may be interesting to those who remember him.

A recent management news item reports that **Gordon Brown** has been elected a director of United Carr Fastener. . . . **Helge Holst** is treasurer and corporate counsel for Arthur D. Little, Inc. He has been very active in an international program. He has been busy opening branches of Arthur D. Little in England, Switzerland, Scotland, Canada and Mexico, and is considering a branch in Japan. On behalf of the New England Council, he appeared as a witness before Senator McClelland last June, to aid in developing sound federal patent policies. He is also active as chairman for Concord, Mass., in M.I.T.'s Second Century Fund. On a more personal note, his family anticipates two weddings this coming summer.

Since this month's mail bag contained mostly news clippings, ideas by other class secretaries could broaden our thinking, possibly spark some news in letters from you. For example, ideas such as these are in the November, 1961 issue. Keep us informed of your activities, promotions, demotions, etc. If you have nominations for characters to be included, send a note. Wire and keep the pot boiling. Write us what you have done; your letters and cards go into the reserve file to use when I run out of steam. Try to tell us, whom you've seen, where you've been, what you're doing or going to do, what the children and grandchildren are doing, a bit of philosophy, etc. Maybe one of these ideas will hit you in your motivation bull's eye. It did me. Yours truly should have written that he was elected honorary vice-president of the Philosophical Society of England in 1959. He'd like to say you're a wonderful class. Happy New Year.—**Gordon A. Speedie,** Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.; **Edwin S. Worden,** Secretary, 6 Murvon Court, Westport, Conn.

'33

And a Happy New Year to each of you, with the wish that all your blessings may be large and all your troubles small in 1962. . . . Front and center as we start the year is **S. Quimby Duntley,** who received the Frederick Ives Medal of the American Optical Society last fall. Quimby was here on the Faculty for many years and is now director of the Visibility Lab at Scripps in California. Our agents tell us that Quimby still summers in New Hampshire. . . . Honors and congratulations, too, to three mates: **Don Fink, Cole Allen,** and **Rodney Chipp.** Don is now vice-president for research of Philco; he served for several years as manager of research there. . . . Cole is now vice-president in charge of the engineering department for American Mutual Liability Insurance in Wakefield; he has been in charge of engineering for the Atlantic Division but now moves from Upper Darby, Pa., to the home office. . . . **Rod Chipp** has set up his own consulting engineering offices in Bloomfield, N.J.; for many years Rod served in important executive engineering capacities for I.T.T. Communication Systems.

We regret to report the deaths of two classmates: **Willis G. Carsley,** II, a year ago, and **Francis H. MacDuff,** II, last summer. Colonel "Mac" was with us as a

student for four years and was well known to many in the class.

Two major moves to report: **Dick Payzant** from Salina, Kansas, to Tucson, Ariz.—a move in the right direction for winter living. **Bill Pleasants** is back in the Philadelphia area after a tour in Anchorage, also a good move. . . . **Gil King,** Director of Experimental Systems in IBM Research, breaks into the news for chairing a group studying research library automation; a librarian's job might not be too difficult with the status quo, but just consider the complications caused by the influx of new materials on new subjects. . . . We note too that **George Ropes** has joined the ranks of educational councillors for Tech in Westchester County.

Three visits (two by phone) recently. **Ed Goodridge** phoned from the outskirts of town, just passing through trying to induce a few electronics engineers to move away from Boston. Semi-retired, Ed is a man in a hurry and going places if we ever saw one. . . . **Ellis C. Littmann,** also by phone, volunteered his services willingly for an off-beat assignment. Having acquired operating plants in midwestern cities, Ellis keeps the airlines from failing completely. Ellis reports that his son, Ronny, is now a sophomore at the University of Colorado. . . . And **John MacIsaac,** all the way from the Fieldcrest Mills in Spray, N.C., was here for an A.S.M.E. meeting. As we go to press, word comes from **Cal Mohr,** who has attended several M.I.T. get-to-gethers in the Chicago area. For the first time in many a moon, Cal saw no '33ers, so he could report only his good health.—**R. M. Kimball,** Secretary, Room 3-234, M.I.T., Cambridge 39, Mass.

'34

In late October, **Wilbur H. Paulsen** talked on the "Weather Radar Data Processer" at the Weather Radar Conference in Kansas City. Since 1950 he has been developing radar and other equipment for the Air Force in their work on weather detection and analysis. He is located at the Air Force Cambridge Research Center at Bedford, Mass., and lives in Dover, Mass., with his wife Muriel and 18-year-old daughter, Karen. . . . Your secretary is sorry indeed not to have more notes on the experiences and accomplishments of our classmates. This particular month caught most of them too busy having experiences or planning accomplishments to pass along news.—**G. K. Crosby,** Secretary, Longwood Road, Huntington, W.Va.; Other Secretaries: **Harold E. Thayer,** 415 West Jackson Road, Webster Groves 19, Mo.; **Malcolm S. Stevens,** P.O. Box 93, Westfall-Chaffee Laminates, Inc., West Barrington, R.I.; **J. P. Eder,** 1 Lockwood Road, Riverside, Conn.

'35

Hail to the Champ! **Hal Bemis** won the title of Class Golf Champion in the first annual tournament. Furthermore, he won it the hard way, by winning all his matches in the combination Consolation-Second Flight after an opening round loss to **Bill Barker** back in early July. Another plus, Hal played all his matches on the rugged East Course of the Merion Golf Club in Ardmore, Pa., which has a U.S.G.A. rating of 73. Hal has a handicap of 16 and his gross scores in the tournament were 89, 87, 88, 84, 86, and 90—the acme of consistency. **Leo Beckwith** was runner-up. Low gross award went to **Dick Bailey** with beautiful 73 at the Ridgefields Country Club in Kingsport, Tenn. Dick tied Bill Barker playing at the Nashua, N.H., Country Club for the low net at 69. A number of the 22 entrants had to drop out under pressure of business. Most matches were played by mail under rules set up by the Tournament Committee headed by **Art Marquardt,** but the following matches were played "head-to-head" on local courses: Gordon Scowcroft and Ham Dow, Bob Forster and Allan Mowatt, Gordon Scowcroft and Bob Forster, Bob Granberg and Art Marquardt, Leo Beckwith and Fran Muldowney, Leo Beckwith and Bill Barker. Others who played at least one round included Bill Bennett, Richmond, Va.; Sid Grazi, Denver, Colo.; Wes Loomis, Des Plaines, Ill.; Jack Orchard, Silver Spring, Md.; Henry Ogorzaly, Madison, N.J.; and Dick Shaw, Hartford, Conn. Ned Collins, Bill Cross, Paul Gilmont, Henry King, and Elmer Szantay all had to withdraw due to other commitments. All in all, it was great fun and the Tournament Committee hopes for greater participation next year. If you did not receive a notice this year, be sure to let us know of your interest by sending a card to the class secretary now while it is still fresh in your mind.

Dave Cobb, District Secretary from Southeastern Mass., reports as follows: "During most of 1960, I was trying to sell a 16-room house in Dedham that belonged to my father who died in 1959. It was sold this last June to the abutting Allin Congregational Church which will use it and the land for the expansion of church activities. The man who is chairman of the Prudential Committee, and who signed the papers, is none other than Art Marquardt. Then in June, I married off my one remaining child, a daughter named Judy. In August, I drove out to Dayton to see my son Tony, who got married a year ago, and his new son. On the way home I stopped in Cleveland to look up **Pete Grant** and **Jack DuRoss. Bernie Nelson** and others in the telephone business would tell me to be sure to "telephone ahead," but instead, I drove the length of Detroit Avenue, through all the damn stop lights, only to find a deserted group of buildings with a sign reading Grant Photo Products. I called both the plant number and Pete's home number only to get the familiar "this is a recording, the number . . . etc." A gas station attendant told me Pete had sold his business to Ansco but knew nothing more. Jack DuRoss' place wasn't at the address given and there was only a vacant lot at the address the new tenant gave me. A telephone call indicated that Jack was out of town that day anyway. . . . **Charlie Debes** writes that he is still trying to get the financing for his projected Home for the Aged there in Rockford. We hope he gets it soon as it is certainly a great idea and should go over well once it is done."

To bring the record up to date, **G. Peter Grant, Jr.**'s new address is c/o Ansco, Vestal Parkway, Binghamton, N.Y. To further update the information, perhaps our erstwhile district secretary for Ohio will elucidate. Pete Grant is one of a number of our classmates with address changes. Here are some more: **Chester A. Siver,** formerly in Flossmoor, Ill., is now at Chapman Valve in Indian Orchard, Mass.; Dr. **Frederick Paul** moved to 217 Nanticoke Road, Baltimore, Md., from Southbridge, Mass. We welcome **John Bainbridge** and **Jack Holley** to the Boston area from Cedar Rapids and Dayton respectively. John Bainbridge is now at 18 Old Town Road, Wellesley, while Jack Holley can be reached in care of the Field Service Division of Laboratory for Electronics. **Herbert C. Thomas** is now located at 541 Colonel Dewees Road, Wayne, Pa. (Hal Bemis, please note.) I am sure there is news of interest behind each of these moves that you would like to share.

Ed Loewenstein, District Secretary from North Carolina, sent the following interesting letter: "Thanks for keeping me on the list of minor grade secretaries. I am not able to do a good job because I can't contact very many people in this area or keep up with them. In recent weeks, I have had some contact with **Johnny Westfall** and Larry Stein, '34; and several weeks ago, we had a big (for us) M.I.T. Alumni meeting for the Second Century Fund at which we had Bryce Leggett, '40, Associate Dean of Admissions, as the featured speaker. I am sorry I could not get back to our reunion or the M.I.T. Centennial, and I am ashamed to admit that I did go to my wife's 100th Anniversary at Vassar in June. I see **Jay Stern** in Parkersburg, W.Va., quite a bit; we are doing some architectural work for him at the present time. Jay has been to Greensboro and has been on several boat trips with me. At the present time, he is president of the Wood County Bank in Parkersburg and very active in community affairs.

"I had a mild heart attack last January, which I believe I wrote you about; but I have recovered fully and, aside from a few lukewarm restrictions, I am back in the groove. I keep my boat near New Bern, N.C., and I am still hoping that you or any of the rest of our crew will pop in on me for a reunion and round of activities. The North Carolina Outer Banks are marvelous for sightseeing and cruising, for fishing and hunting; and Greensboro is only four hours away. My oldest daughter is a sophomore at Dana Hall in Wellesley, and my youngest daughter is in the eighth grade in public school here in Greensboro. Both of my children are avid horsewomen, members of the local hunt, and doing very well with it. We have had to buy them horses, which with all the trappings, are a very painful financial affair. My stepson got married last September, and he and his wife are back at Chapel Hill (University

of North Carolina) for some more book learning. I am hoping to take a trip to southern France and Italy in March, and I am still doing a little part-time teaching at the Woman's Branch of the University of North Carolina in Greensboro. My architectural business appears to be having the usual ups and downs, and we continually appear to be doing more work and earning less profit all the time."

Hermann Laudani of North Reading has been named general superintendent of Mystic Valley Gas Company in Malden. Hermann joined the Lawrence Gas Company upon graduation and was transferred to Malden in May, 1950. Since 1957, he has been superintendent of production and distribution. . . . Dr. **T. J. Suen** of New Canaan, Conn., has been appointed director of the Plastics and Resins Research Unit at American Cyanamid's Stamford Laboratories. He has been with American Cyanamid since 1945. . . . We can now report that **Gordon Scowcroft**'s official title at Lever Brothers is marketing vice-president of the Special Products Division. Previous to this, he was marketing vice-president at United Fruit Company and held a position in marketing at the Campbell Soup Company following earlier employment by Lever Brothers from 1936 to 1950. . . . Contact your nearest secretary, now.—**Allan Q. Mowatt** Secretary, 11 Castle Road, Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar,** Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis,** 510 Avonwood Road, Haverford, Pa.; **Elmer D. Szantay,** 6130 North Kilbourn Avenue, Chicago 16, Ill.; and **Gerald C. Rich,** 673 Rosita Avenue, Los Altos, Calif.

'36

It is with deep regret that I report the death by accident of **Samuel J. Loring,** probably on November 4. He was found dead the next morning in North Canton, Conn., after his motorcycle apparently went out of control on a curve. Sam lived on Cherry Brook Road in North Canton and was a senior scientist at Hamilton Standard, a position he had held for the last three years. He was born in Cincinnati, prepared at Walnut Hills High School, and graduated in Course IX-B. He joined Chance Vought as a structural engineer and remained there until 1945 when he became an independent consulting engineer in Bridgeport. He moved to Hamilton Standard in 1950. While at Chance Vought, Sam was awarded the Wright Brothers Medal of the Society of Automotive Engineers. He was the youngest person ever to receive the award. He also received the Melville Medal from the American Society of Mechanical Engineers in 1950. He leaves his wife, Mrs. Doris Baxter Volgmuth Loring; a son, Samuel A. Loring; two brothers and a sister. To his family the class extends sympathy which I am sure comes straight from the heart of us all.

The Alumni Register has noted the change of address of Major General **Marshall S. Carter** from Colorado Springs to the U.S.A. Air Defense Center, Fort Bliss, Texas; and that of **Leonard G. Leader** from Somerville to 56 Winfield Way, Winchester, Mass. . . . In between struggling with a Girl Scout troop, church fair and three children in college, your secretary traveled to Norman, Okla., in late October, where she served as chairman of a Leadership Development Conference for Universalists and Unitarians, sponsored by several departments of the Unitarian-Universalist Association and related agencies. The conference, which was attended by participants from 14 states, the District of Columbia and Mexico, was held at the Extension Study Center at the University of Oklahoma. Because of tardy action by the Oklahoma Legislature, we were not able to hold the conference at the new Kellogg Center at the University, but let me urge you if the opportunity arises not to pass up a chance to attend a meeting or conference at the Center. The facilities are "out of this world." Best wishes for the new year to you all.—**Alice H. Kimball,** Secretary, 20 Everett Avenue, Winchester, Mass.

'37

Jim Ewell has been appointed a director of Procter and Gamble; he has been a vice-president since 1955. Jim and his wife, Marjorie, with their four children, live at 8700 Camargo Road, Cincinnati, Ohio. . . . **Al Woll** has been elected treasurer of the Evansville School Corporation, Evansville, Ind. . . . **John Fellouris** has a daughter at Simmons College. John, his wife and the other two daughters will be in Athens, Greece, for a visit when you read our news. It is going to be interesting to find out how many of our class have sons and daughters in college. We will get this information from the questionnaires which have been sent to all of our class. If you have not completed it to date, today is a good time to send it along to your secretary with a photo (a Polaroid snapshot will be fine if you don't have a recent picture of yourself). Your committee is working at an increasingly accelerated pace on the plans for the 25th Reunion, and all we need is your co-operation.—**Robert H. Thorson,** Secretary, 506 Riverside Avenue, Medford, Mass.; Professor **Curtiss Powell,** Assistant Secretary, Room 5-323 M.I.T., Cambridge 39, Mass.; **Jerome Salny,** Assistant Secretary, Egbert Hill, Morristown, N.J.

'38

Once again we have the death of a classmate to report. Word has been received that **Theodore Lisberger** died September 1. No other information is available.

Elmar V. Piel has been appointed associate professor of chemistry at Norwich University, Northfield, Vt. He is one of 10 new professors on the staff there this year. . . . **Dale F. Morgan** has been named manager, Sales Administration, of Union Carbide Olefins Company. He transferred to the company as a product manager when it was formed in 1958, having previously served with Union Carbide Chemicals Company since his graduation from the Institute. . . . The latest annual report of Arthur D. Little, Inc., mentions work performed under the general direction of **Bruce S. Old,** Senior Vice-president. It says: "We have been working with others for several years on a research and development program to improve the ER-L fluid-bed process for the direct reduction of iron ore. Dr. Bruce S. Old and his colleagues hope soon to be able to demonstrate the process on a scale sufficient for the design and construction of commercial plants. Potential customers, especially abroad, have shown keen interest and have asked us to examine the feasibility of adapting the process to their particular needs."

Harold H. Strauss has received an appointment for the state of California. Governor Brown recently named him to a four-year term on the State Board of Registration for Civil and Professional Engineers.—**David E. Acker,** Secretary, Arthur D. Little, Inc., 1424 Fourth Street, Santa Monica, Calif.

'39

Colonel **Thomas J. Hayes, 3d, I,** (West Point, '36), one of the most experienced Army engineers in the field of ballistic missile-site construction, has been named commander of the Corps of Engineers, Ballistic Missile Construction Office. Colonel Hayes, a registered professional engineer, is a member of the Society of American Military Engineers, the United States Committee on Large Dams, and the Permanent International Association of Navigation Congresses. . . . Dr. **Falih Nazmi Darmara,** XIX-G, formerly of Istanbul, Turkey, is currently president of Special Metals, Inc., a new firm which recently purchased the Metals Division of Kelsey-Hayes, the leader in the field of vacuum metallurgy. Dr. Darmara, an international authority on vacuum induction melting, is the author of a vast number of papers on the subject, and has helped the process grow from a laboratory technique to today's major industry. . . . Two '39ers were represented at the 9th Weather Radar Conference held in Kansas City during October: **Roland J. Boucher,** XVI-G, was chairman of the session of Meteorological Echo Analysis. **Raymond Wexler,** XVI, spoke on "Influence of Echo Intensity Distribution Aloft on the Radar Detection of Precipitation." Both Boucher and Wexler are with Allied Research Associates, of Boston.

Frank F. Hines, II, is research and development director of RdF Corporation, Hudson, N.H. Formerly a staff engineer with Baldwin-Lima-Hamilton Corporation in Waltham, Mass., Frank has had over 20 years of experience in the development of resistance thermometers, strain gauge transducers, and related instrumentation. RdF Corp specializes in temperature measurement and fine wire technology. . . . **William R. Willard,** XVII, Vice-president of the O. L. Willard Company of Willimantic, Conn., is a

director of the Connecticut Lumber Dealer's Association and is extremely active in many community activities in his native city. He now lives in nearby Windham Center. Bill started with Aberthaw Construction Company in Boston at graduation, then went with the Austin Company before entering the Army Corps of Engineers in 1941. He rose to the rank of major, and continued in the active reserve for several years, attending the command and general staff college at Fort Leavenworth, Kansas, in 1949. The Willards have two sons, David, 17, and Thomas, 9.

Harry Wexler, XVI, Director of Meteorological Research of the United States Weather Bureau, was the chief scientist for the International Geophysical Year Antarctic Program. Harry, a native of Fall River, Mass., recently received one of the Career Service League awards of the National Civil Service League, in Washington. . . . **Herbert A. Finke,** VI-C, is now vice-president and general manager of Bomac Laboratories, of Beverly, Mass. Formerly, Herb was director of long-range planning for Varian Associates of Palo Alto, Calif., parent company of Bomac. He is the author of numerous scientific papers and holds some 19 patents for electronic devices. He is a member of I.R.E., the American Management Association, and Phi Beta Kappa.—**Oswald Stewart,** Secretary, 31 Birch Road, Darien, Conn.

'40

Tom Jones was chairman of the first day's activities of the Computer Lecture Series held at Tech October 9-11, 1961. . . . **Dick Spalding** has been advanced to manager of general service and transportation for the Glass Container Division of Owens-Illinois. Previously he was in charge of the corrugated operations of this division. . . . A picture in the Annual Report of Arthur D. Little, Inc., shows **Alfonso Rizo-Patron Remy,** chairman of the Inter-Ministerial Committee on Economic Development of the Government of Peru, examining a research electromagnet of very high field strength. Alfonso has the distinction of being the first of six brothers of the Rizo Patron Remy family to attend Tech. His younger brother, Peter, is now a freshman at the Institute. . . . Don't forget to give your contribution to the Alumni Fund to help swell '40's total come the 25th Reunion. —**Alvin Guttag,** Secretary, Cushman, Darby, and Cushman, American Security Building, Washington 5, D.C.; **Samuel A. Goldblith,** Assistant Secretary, Room 16-325, M.I.T., Cambridge 39, Mass.

'41

The Class of '41 figured heavily in the Annual Report of Arthur D. Little, Inc., entitled "1886-1960—74 Years of Research for Industry." In the report we find Dr. **Howard O. McMahon** listed as a senior vice-president and a co-inventor of the company's newly patented maser refrigerator invention, which is one of its latest achievements in cryogenics. The invention comprises a compact closed-cycle refrigerator operating at liquid-helium temperatures (minus 452 degrees F. and below). It provides the continuous low-temperature environment required by sensitive microwave detectors (masers) and superconducting computer-memory units (cryotrons). Three prototypes of this refrigerator are reported to have been built, one of which is reported to have completed a record 750-hours continuous run. . . . Also, **Martin L. Ernst** is reported as participating in a company project involving an analysis of trade routes of the world, aimed at developing a system which is hoped to provide better competitive rates and services by U.S. vessels. This study has grown out of the Project WALRUS conference, held by the National Academy of Sciences at Woods Hole, Mass., in 1959. During the past year Martin served as president of the Operations Research Society of America. Additionally **D. Reid Weedon, Jr.,** was listed as a vice-president of A.D.L., and a member of its board of directors.

Raymond F. Koch was recently elected a vice-president of the Comptometer Corporation, Chicago, by its board of directors. Ray has been secretary of the corporation since 1957. He joined Comptometer in 1946 as an apprentice toolmaker, and was appointed assistant to the president in 1950. He became assistant secretary of the company in 1954. Ray received a B.S. degree in business engineering administration from M.I.T. in 1941 and entered the Army that year as a second lieutenant. He was separated as a major in 1946. During his military service, he was graduated from the Army's command and general staff school at Fort Leavenworth, Kansas, and served 15 months in the Southwest Pacific area. He is a member of the Indian Hill Club, Winnetka; Union League; Economic Club; Chicago Historical Society; and Sons of the American Revolution. He and his wife, the former Helen Huling, whom he married in 1947, have three children, Helen M., 10; Raymond W., 8; and Margaret Ann, 3. The family resides at 38 Essex Road, Winnetka, Ill.

Stanley M. Smolensky has been appointed general manager of the National Electronics Division, Washington, D.C., of Thiokol Chemical Corporation. In addition to his responsibilities at National Electronics Division, he co-ordinates marketing activities for the company's new Trackmaster program. Stan joined Thiokol in June, 1959, as assistant to the executive vice-president. He was later appointed executive director of marketing at the company's Reaction Motors Division, Denville, N.J., and subsequently was director of operations at that division until his recent appointment. Stan received his B.S. and M.S., in mechanical engineering from M.I.T. in 1941 and 1948 respectively, and attended Warsaw Polytechnic, Warsaw, Poland, the Army Command and General Staff school, and the Industrial College of the Army. He served with the U.S. Army from 1942 to 1956 as an ordnance officer in various military positions including assignments to the Army General Staff, Office Chief Research and Development; Ordnance Company; and Battalion Division Corps. He attained the rank of lieutenant colonel. He is a member of the following professional societies: I.R.E., A.O.A., A.R.S., A.U.S.A., A.S.M.E.

Herman A. Affel, Jr., has recently been appointed vice-president of Auerbach Electronics Corporation and is located in the company's Philadelphia headquarters where he directs the operations of the technical staff. Herman had been previously associated for 15 years with the Philco Corporation, specializing in the development of data processing equipment and was most recently general manager of Philco's Computer Division, which he founded and organized. Prior positions held at Philco include director of computing and control engineering in the Government and Industrial Division and manager of the Systems Management Program of the U.S. Navy high altitude bombing equipment where he made contributions in transistorized airborne digital computers. He is the holder of several patents on the development of microwave antennae, an Educational Counselor at M.I.T., and also a member of the M.I.T. Corporation's Visiting Committee for the Department of Physics. He is also a member of the I.R.E., the Franklin Institute, The American Ordnance Association, the Association of the U.S. Army, and the Electronic Industries Association. He resides at 315 Rex Avenue, Philadelphia, with his wife, Eugenia B., and their three children.

James S. Thornton was chairman of a technical session at the 16th Plastics-Paper Conference of the Technical Association of the Pulp and Paper Industry (TAPPI), held on October 9-11, 1961 at the French Lick-Sheraton Hotel, French Lick, Ind. The session which Jim directed was on "Extrusion Coating;" it featured two panel discussions and 16 technical papers on major topics pertinent to coating and the combination of plastics with paper to form laminates and other products. About 450 U.S. and Canadian chemists, engineers and paper coating specialists and technologists attended the three-day meeting. The Technical Association of the Pulp and Paper Industry is a technical society of more than 10,000 engineers, superintendents, chemists and production executives, organized for the search and dissemination of knowledge relating to pulp and paper in all of its forms, including paperboard, structural boards and converted paper products. Jim is chairman of the Extrusion Coating Committee of that organization. He is also manager of the Extrusion Coating Division of Frank W. Egan and Company, 36 South Adamsville Road, Somerville, N.J.

Bjorn Lund, head of Propulsion Engineering System of the Electric Boat Division of General Dynamics, spoke at an A.S.M.E. meeting at the Springfield Armory Officers Club on "Maritime Gas-Cooled Reactor Propulsion Plants." Lund

was chief engineer of the Skate nuclear propulsion plant project in the development of the nuclear submarine. In addition to attending M.I.T., he studied mechanical engineering at the Polytechnical Institute of Berlin-Charlottenburg, Germany, and worked on compression development for the Manhattan Project during World War II, the project which developed the atomic bomb. . . . **Robert T. Parry** has been elected commander of the Ralph H. Thomas Post 433, American Legion in Belmont, Mass.; Bob holds the rank of lieutenant colonel in the Marine Corps Reserve and is a Marine Corps veteran of World War II and the Korean conflict. He is married to the former Marguerite Lydon of Belmont. They have three children: Janet, 11; Nancy, 9; and Robert, 3. The family resides at 61 Mayo Road, Wellesley Mass. . . . Information for insertion in this column should be sent to any one of the following.—**Walter J. Kreske,** Secretary, 53 State Street, Boston; **Henry Avery,** Assistant Secretary, 160 Mohawk Drive, Pittsburgh 28, Pa.; **Everett R. Ackerson,** Assistant Secretary, 16 Vernon Street, South Braintree 85, Mass.

'42

By now every regular reader of this column has probably heard at least three times that our 20th Reunion will be held next June 8 to 10 at the Mayflower Hotel in Plymouth, Mass. The not-so-subtle purpose of this reminder is to ask each reader to call or send a postcard to a classmate to remind him to save the long weekend. **Al Goldis** and the committee have already laid out the program, budgeted the expenditures, requested the prizes and prepared lots more publicity. If you have already saved the dates, sent in your $5.00 class dues, and told a few friends, I am afraid that all there is left to do is wait five more months.

Jack R. Williams has been elected vice-president, European Operations by the Worthington Corporation. You may recall that Jack left Cuba shortly after Fidel Castro arrived and went to Paris for Worthington. He is now responsible for all production, engineering, sales and service functions of the seven associate companies in Austria, France, Germany, Italy and Spain. Jack was born in Paris, raised in Spain, has lived in several other countries, and speaks several languages. Prior to joining Worthington, he was overseas for the International General Electric Company. He lives at 25 Rue Spontini, Paris. . . . The first Fiber Society Award for "Distinguished Achievement in Basic or Applied Fiber Science" was presented to Dr. **Milton M. Platt.** The ceremony was part of the annual banquet at West Point and the presentation was made by Dr. John H. Dillon, President of the Textile Research Institute and in-coming president of the Fiber Society. The award is in recognition of the development of fundamental knowledge concerning textile fibers or textile structures; the development of methods of evaluating fiber and textile properties; the utilization, or mechanical or chemical processing of textile fibers into end products. In his acceptance speech Milt discussed his hope that significant breakthroughs will be forthcoming from future research on the problems of surface mechanics (as contrasted with internal mechanical properties) of fibers, yarns and fabric structures. He added, "Although much work has been done in this field, it is understandable why most of the approaches thus far have been chiefly exploratory and semi-empirical, for the problems of surface mechanics are indeed very complex. A better understanding of the how and why of the mechanical interaction of fibers in finished fabrics will give insight to many problems plaguing the textile industry today." As examples he cited destructive abrasion, surface feel or "hand," multilateral tensions such as in the tailoring of fabrics to conform to body contour, crease resistance, tear resistance and many others. Milt's undergraduate and Ph.D. degrees were in civil engineering. He has been in textile work since joining Fabric Research Laboratories in 1946 and is vice-president and associate director of fabric research of that company. Some time ago we published a partial list of his papers. We now add that he is a frequent guest lecturer in textile technology at M.I.T., a past consultant to the Office of the Quartermaster General and a member of the National Academy of Sciences, National Research Council Quartermaster Advisory Committee on Textiles.

A telephone call from my daytime Park Avenue, New York, neighbor, **Ted Eliot,** reported that Princeton is a congenial place both to live in and in which to meet classmates. One pleasant day this fall he got off the commuter train to find **Dan Hulett.** Dan was up from Charleston, W. Va., on a trip to recruit for Union Carbide Chemicals; he is production superintendent. On another day Ted was delighted to discover that **Bob Navin** lives right close by. Bob avoids the commuter traffic by running his own management consulting firm with offices in Princeton. At the moment Ted is busily engaged in sales work for Scientific Design Company. . . . These notes are being written well before Thanksgiving Day. Let us be the first to write, and you not the last to receive, warm best wishes for a Merry Christmas and a Happy New Year. We hope to see you all in June if not sooner.—**Lou Rosenblum,** Secretary, Technological Investors Corporation, 430 Park Avenue, New York 22, N.Y.; **J. J. Quinn, Ed Edmunds** and **Bob Keating,** Assistant Secretaries.

'43

Ira G. Cruckshank was appointed to the new post of manager of engineering at the Stanley Works in New Britain, Conn. He has moved here from Cicero, Ill., where he was manager of manufacturing engineering at the General Electric Company plant there. . . . **Frank E. Briber, Jr.** is manager of the newly organized Cement Industry Department of Allis-Chalmers Manufacturing Company in Milwaukee, Wis. The department has been created to handle the sales of all of this company's products and services to the domestic cement and lime industries and is composed of a number of account managers individually located in strategic market centers. . . . **Virgil Otto** has been named resident manager of the Oakbrook office, located in suburban Chicago, of A. C. Allyn and Company, a Chicago investment firm. Virgil has been in the investment field for a long time.

Irenée duPont, Jr., director of the technical service laboratory of the Polychemicals Department of DuPont, was appointed assistant production manager for "Mylar" polyester film in the Film Department. A member of the board of directors of DuPont since May of 1959, Irenée has been with the company in engineering and supervisory positions since 1946, when he started as a development engineer at the Arlington, N.J., works. His career with DuPont has included engineering and supervisory work in West Virginia, in the Sales Division and manager, technical services, plastics sales. . . . **George H. Hotte,** who received his master's degree with our class, has been appointed executive vice-president of Texplant Corporation in Stamford, Conn. A former faculty member at M.I.T., George has been president of the American Association of Textile Technology.

The annual report of Arthur D. Little, Inc., describes the consulting project for 30 major producers of pulp and paper performed by that company under the leadership of **Fred Perry, Jr.,** which examined the prospects for future economic growth of the sulfite-pulp industry. . . . Change of addresses noted are: **Roland Grandgent** from Long Island to Granby. Conn.; **William V. Engels** from Bayside, N.Y., to Great Neck, N.Y.; and **Hans J. Haac** from Newark to Wilmington, Del. News for these notes is always welcome.—**Richard M. Feingold,** Secretary, 10 North Main Street, West Hartford 7, Conn.; Assistant Secretaries: **Christian J. Matthew,** Arthur D. Little, Inc., 314 Battery Street, San Francisco, Calif.; **John W. McDonough, Jr.,** Meissner Engineers, 300 West Washington, Chicago, Ill.

2-'44

Sorry to report that we won't have any news this month. Between "business," Second Century Fund, and traveling, I have been rather busy. Furthermore, I have observed a certain attrition in the ability to write of the members of the Class of 2-'44. Please drop me a note soon.—**Paul M. Heilman,** Secretary, Reflectone Electronics, Inc., West Main Street, Stamford, Conn.

'45

Fran joins me in wishing you and your families a belated happy and prosperous New Year. Now that we have reached

the age of receding hairlines and expanding waistlines, and have, in general, passed the age of expanding families and receding income we trust you will find additional time to expound upon your particular lives. . . . We are most grateful to Nick Mumford, Dick Martin and Les MacCracken, who have sprung for Springer in accordance with our November request. When are the rest of you going to get in the "Springing" habit?

After some nine years with IBM, **Richard R. Martin** and a few associates last September formed Decision Systems, Inc., located in Silver Spring, Md. The objective of DSI is to apply advanced electronic information processing techniques to the complex management and control problems of military and industrial organizations. DSI appears to have a tremendous amount of knowhow and, as Dick states, all we need is business! . . . Dick worked on cryogenic gas liquefier development, servomechanism design, and ultra-sonic radar trainers in the late 40's while in Boston at Tech and Boston University. After Korean duty as a technical liaison officer at the U.S. Naval Computing Machine Laboratory in St. Paul, Dick joined IBM where he has held many responsible development positions these past several years. The Martins spent 10 days in Nassau last summer and report that **Bob Symonette** seems to have the island under control.

Late in the summer **William N. Beam** joined Illinois Tool Works as sales manager of the Licon Division, manufacturers of precision electrical switches, located on West Irving Park Road, in Chicago. Bill, was formerly district sales manager in Ohio for Automatic Timing and Controls, Inc., of Philadelphia. Many of you will recall that Bill and Dolores received a reunion reward in advanced planning! . . . Dr. **Marie A. Jakus,** who received her Ph.D. with our class, has been appointed research program co-ordinator for vision in the Extramural Programs Branch, National Institute of Neurological Diseases and Blindness. . . . A recent address change finds **Waite Stephenson** up in Anchorage, Alaska, with RCA Service, Inc.—some change from the San Francisco Bay area! . . . In another overseas move, **Art Hall,** still with G. L. Cabot, is now in Buenos Aires, Argentina. . . . **Matthew "Red" Harrington,** still with Shell Oil we expect, has moved from Barrington, R.I., to Yardley, Pa.

Heartiest congratulations to **Dave Clare** on his September promotion. Dave has been named vice-president of manufacturing and elected a member of the management board of Johnson and Johnson. Dave joined J & J some 15 years ago and since then has served in numerous supervisory positions in the manufacturing division. His most recent assignment was director of manufacturing for the Permacel Division. Dave, Peggy, and the four kids continue to live in Westfield, N.J. . . . **Tom Hewson,** my regional vice-chairman of S.C.F. for New Canaan, Conn., continues with St. Regis Paper Company. When Tom is in town, which is not too often, he commutes to the new Research Center in W. Nyack, N.Y., rather than New York City. As a result of this change, Tom's and **Jim Brayton**'s paths no longer cross in the Socony Mobil elevators at 42nd Street and Lexington Avenue. I saw Jim at a recent M.I.T. Club meeting in Westport, Conn., and Jim reports that the Braytons spent a most enjoyable summer sailing whenever possible here in the Sound and up off the Islands. At the time of our meeting, Jim and Eileen were fighting poor weather and too good winds as they worked the boat up towards Jamestown, R.I., for the winter. . . . **Hal Thorkilsen,** now located in Westport, continues to climb the rungs of the Colgate-Palmolive ladder.

Some of us have wives, many of us have children but I know of only one who has a monkey! A late October issue of the local Stamford paper reported that Chipper, a year-old monkey owned by Reg Stoops, '48, was back at play among branches of trees at his home after 18 hours away from home—shades of disappearing children! We question, however, how many classmates' children have had to be rescued by fire department aerial trucks. . . . **Les MacCracken**'s early November letter requires direct quotation: "So now you have to ask for some news??? Nineteen years seems short to me from my position and in view of a recent addition to the family. Last spring, shortly after an announcement came through from **Dave Flood,** I wrote him and described Lucille's and my daughter, LuAnn; she is now five months and 26-days-old, and we note that she is growing by the minute. We're now at the phase where LuAnn's activity with the bottle and vegetable shows tremendous precocity and skill in directing the nipple and spoon, respectively, into her tiny, cherubic, sweetheart mouth. Unaware of the cataclysmic events going on round about her, she nestles in her crib and is responsive in a way that only parents know." Since many of us—not you girls—have forgotten these days, I knew you would enjoy Les' comments on a newborn child.

The following thoughts of Les, the associate professor of electronic engineering, seem just as appropriate: "As each one of us could write a book on our lives, were we pressed to the wall at gunpoint, I won't start mine until all my retirement, annuity, and insurance plans are paying off. Right now, my family residence at 1782 West Union Boulevard is a kind of Bethany, when I want to relax from the pressure of classes. Though my load is light, were it measured in hours, time-study style, the problems of metamorphosis to the role of a mathematician (which modern technology requires in electronics—I went past physics) are basically ones in artificial intelligence. Actually I'm real, but the feeling of associate neurons to burn isn't, with me. With publications in electromagnetic wave theory and automatic control, I have continually found that corresponding specialties in electronics require mathematics Claude Shannon style; and, if that isn't good enough, then I always have to borrow from the mind of Norbert Wiener or Richard Bellman. My present feelings are that as long as I can serve 20 to 30 years from now as a professor without escaping to the deathly position of administrative deskmanship, I will have justified the considerable introversion that I have experienced. Witness, for example, the few times I get around to seeing our classmates!"

Nick Mumford reports the following in a letter dated November 4: "I have been meaning to write for sometime, but life is difficult in that respect (editor's comment: A well-known disease of the Class of 1945). We are sorry that we missed you last July; we did, however, have a wonderful visit in New England and Rosemary enjoyed a couple of days in New York while I worked with Grumman on the Island. Libby **Paterson**—Mrs. **Jerry A.**—was in Dallas in June for a Junior League convention but we only had a chance to talk by phone." . . . In September I ran into **Dave Trageser** in the Washington Airport. His company, High Voltage Engineering, has just installed a Van de Graaf generator here at Chance Vought and Dave indicated that he would be down sometime soon. I was in San Francisco last week and tried to call **Vinnie Butler.** He wasn't home, but his wife said they and their two daughters were all fine. Only news here is that we are all busy and well. With the Ling-Temco merger, we have reorganized. **George Upton** is now chief of aerodynamics while I am chief of propulsion, both in the Aerodynamics Division of Chance Vought. Forgot—we went to the annual picnic at **Jake Freiberger**'s on July 4. They are all fine with the new addition making five now. Also in attendance were Bill Scott, '44, Max Daggett, '46, Mrs. Otto Wetzel; Otto, '48, was in Canada; there were several others I don't remember!" See you, if and when, you spring for Springer.—**C. H. Springer,** Secretary, Firemen's Mutual Insurance Company, 420 Lexington Avenue, New York 17, N.Y.

'46

This will, of necessity, be a short column. I am rushing to get ready to leave for Minneapolis in a couple of days. Jan and I have lived in Winchester all our lives, but recently an opportunity opened up at the Aeronautical Division of Minneapolis-Honeywell in Minneapolis, and after a great deal of thought and some trepidation, I have decided to accept it. We have sold our house in Winchester and made an offer on one in Minneapolis, and I leave shortly to start work a few weeks before the rest of the family moves west. Our younger daughter, 11, is ready to go immediately, but for our older one, 14, this move means the end of life as it is enjoyed on earth. Those of you who have made such a move with teenaged daughters will, I am sure, sympathize with us in these trying times. . . . **Ford Park** has been appointed associate editor for "International Science and Technology," a new publication by Conover-Mast Publications, Inc., New York. This new magazine will serve the specialized information

needs of scientists and engineers here and abroad. Ford received his B.S. and M.S. in mechanical engineering from M.I.T., was assistant professor of engineering at the University of Buffalo, section engineer with the Linde Company Division of Union Carbide, and recently associate editor for "Product Engineering." Ford lives at 100 Glendale Road, Parkridge, N.J. . . . **Frank R. Stevens,** recently manager of sales development and the new products department of Raytheon's electromechanical components operations, has become vice-president and treasurer of a newly formed company, Spectran Electronics Corporation, 146 Main Street, Maynard, Mass. The new company has been formed to develop and manufacture magnetostriction components and instruments. Their products will include multiple-filter spectrum analyzers for sonic and electromagnetic waveform studies, magnetostriction rod filters for frequency reference, analysis and signal selection, and magnetostrictive delay lines for use in digital computers and in radar and communications systems.

Mel Zisfein writes to report that he has left Bell Aircraft Corporation and is now division manager of the Astromechanics Research Division of Giannini Controls Corporation. His plant is located at 657 Delaware Avenue, Buffalo 2, N.Y. . . . **Jim Corbett** joined the Raytheon Bedford Systems Labs a year ago, after seven years at Thompson-Ramo-Wooldridge in Cleveland. He is manager of Navy requirements for the Labs. Jim is married, has three children, and lives at 15 Smart Road, West Acton, Mass. . . . **Arthur Y. Taylor,** a graduate student with our class, has recently been elected executive vice-president of Jackson and Moreland, a Boston consulting engineering firm. . . . **Norm Sas** writes that he is sorry he couldn't make it to our reunion, but Irene picked just that time to produce Martha, second daughter, third child. Norm is high mogul at Tudor Metal Products Corporation, 176 Johnson Street, Brooklyn 1, N.Y. . . . As indicated earlier, I must close. By the time you read this you should be able to reach me at the address below.—**John A. Maynard,** Secretary, 25 Pheasant Lane, North Oaks, St. Paul 10, Minn.

'48

Four heads are better than one. Or, at least, this premise has guided the preparation of our Class News since 1958. If the style of prose in this column has varied from month to month, it may be because the writing chore rotates from Secretary **Dick Harris,** to Assistant Secretaries **Harry Jones,** myself, and **Bob Mott.** For the first time in a long while **Harry Jones** missed the December issue target date and passed on the following note: ". . . while a business trip interferred with submitting Class News, I did attend the New York City dinner on National Alumni Night at which Dr. Killian spoke. Among the '48ers who filled one table were: **John Walch,** an engineer with the Public Service Electric and Gas Company of New Jersey. John is vice-president of the M.I.T. Club of Northern New Jersey this year. **Edward Frohling** and his wife, Diane. Ed is manager, business development, of the Western Knapp Engineering Company in New York. **Ralph Reis** and his wife, Barbara. Ralph is vice-president of Divine and Fishman, Inc., members of the New York Stock Exchange. **Dick Baker** is district engineer with U. S. Rubber in New York. **John Comer** is with Procter and Gamble's Research and Development division. **Karl Justin** is with Johns-Manville in New York. He is production sales manager for radiant-acoustical ceilings. **John Randolph** is vice-president of Boothe Leasing Corporation in N. Y. C.

"Also I might mention that I had a surprise visitor to the office in New York a while back in the person of **Ken Brock,** not as class agent this time, but rather to talk about corporate long-range planning techniques. Ken's duties at the Foxboro Instrument Company have been expanded beyond advertising manager to also include market research and long-range planning. At that time I was responsible for the long-range planning activity in the Planning and Marketing Division of A.M.F. in New York, and now I am assistant director for technical planning in the company's Research and Development division."—Thanks for your note, Harry.

Class secretaries act as a news dragnet to supplement the dearth that trickles in voluntarily. This summer, I tried to corner **Bob Silberman** at the Royal York Hotel in Toronto for a class news report. Bob, now vice-president and manager of the Bakery and Chemical Division of Ekco Products Company (Canada), Ltd., was attending a bakery equipment convention while I was enmeshed in an Instrument Society of America conference. We never did meet, but a phone interview revealed that Bob had moved his family—wife Jo and their three daughters—to Toronto. Bob's more unusual hobby is racing his Porsche, which he equipped with a self-made digital computer for "real-time" racing computations. . . . On the political front, **Richard S. DeBell** was elected to the Somers, Connecticut Board of Education; **C. Vincent Vappi** was elected president of the Cambridge Chamber of Commerce; and, Mr. and Mrs. **David Whipple** were elected as co-presidents (a first) of the Cohasset, Mass., P.T.A. Dave Whipple is also assistant director of the M.I.T. Instrumentation Laboratory engaged in developing missile guidance systems. . . . Also engaged in missile development is **George H. Wayne,** who left the M.I.T. Instrumentation Lab to form the Wayne-George Corporation, which now has grown in Boston to over 100 employees and a sales volume this year in excess of $1,500,000.

A round-up of promotions this month includes: **William J. Weisz,** elected vice-president, Communications Products, Communications Division of Motorola, Inc., Skokie, Ill.; **Robert L. Deming,** appointed manager of Engineering and Development for Tracerlab's Reactor Monitoring Center in Waltham, Mass.; and **John D. Winninghoff,** named marketing manager for the Research Precision Mechanisms Division of Barden Corporation in Danbury, Conn.—**Herbert S. Kindler,** Assistant Secretary, 128 Elatan Drive, Pittsburgh 16, Pa.

'49

Some academic notes are at the top of the pile this month. **John R. Doyle,** Course V, is now an associate professor at the State University of Iowa. Before going to S.U.I., he was at Tulane University where he earned his Ph.D degree in 1955. . . . **Richard J. Nickerson,** Course II, is now a professor in the Mechanical Engineering Department at Stevens Institute of Technology. . . . From Carnegie Institute of Technology comes news of two appointments: Dr. **Thomas L. Hilton,** Course XIV, has been appointed to a new post as director of teacher education, an office which has been created to co-ordinate all teacher education programs and to maintain liaison with the State Department of Public Instruction. Tom has been on the Carnegie Tech faculty since 1956 and is a member of the psychology and education department. Dr. **Alan J. Perlis,** (Ph.D., Course XVIII) Professor of mathematics and director of Carnegie Tech's computation center, has been named head of the department. He also has been at Carnegie Tech since 1956. Earlier, he served for four years as assistant professor of mathematics and head of the computing laboratory at Purdue University. While at M.I.T., he was a research associate on Project Whirlwind. Dr. Perlis is one of the ranking computer experts in the United States. He is chairman of the committee on an international algebraic language of the Association for Computing Machinery (ACM). He is also editor-in-chief of communications for ACM. He will continue as head of Carnegie's computation center until a new director is appointed. . . . Dr. **Felix Haas,** (S.B., Course VIII, M.S., Ph.D., Course XVIII) will move on February 1, from Wayne State University in Detroit, where he has been chairman of the Department of Mathematics, to become director of the Division of Mathematical Sciences of Purdue University in Lafayette, Ind.

From Springfield, Mass., comes news that **Robert F. Mahar,** Course I, has been appointed to the newly created position of general manager at Daniel O'Connell's Sons, Inc., where he previously was engineer and superintendent. . . . **John C. Miller,** Course X, has been named Chicago district manager for Formica Corporation (subsidiary of American Cyanamid), where he will be in charge of sales and service of formica decorative laminates, flakeboard, doors and adhesives. . . . From "Tax Talk," published in Boston, Mass., for the Taxpayers Federation, comes word that **William S. Edgerly,** Course XIV, has been named to the federation's board of directors. A biographical sketch notes that Bill resides in Wayland, Mass., and is treasurer

of Cabot Corporation, international manufacturers of carbon black and other materials and equipment. He received an M.B.A. degree from the Harvard Graduate School of Business Administration in 1955. Bill is active in the alumni affairs of both schools, being assistant secretary-treasurer of the Harvard Business School Association and a member of the executive committee of the M.I.T. Club of Boston.

Two members of the Class of '49 were mentioned in the annual report of Arthur D. Little, Inc. **Donald B. Sparrow,** (M.S., Course V) provided expert knowledge in the field of pulping for an Arthur D. Little study of the prospects for future economic growth of the sulphite-pulp industry, carried out for 30 major producers of pulp and paper. . . . **Stanley V. Margolin,** (S.B., Course X, M.S., Course X-A) directed a project which enabled the Husky Oil Company to eliminate odorous impurities from lignite processed in Dickinson, N.D. As a result, the company has been able to introduce a new briquet for the home barbeque market and to gain, as a result, more effective use of its lignite plant.

On November 2, I presented a paper entitled "Operations Research in the Textile Industry" at the A.S.M.E. Fall Textile Engineering Conference on Textile Automation, held in the Kresge Auditorium at M.I.T. Quite by accident I bumped into **Peter Lehner,** S.B., Course II, and had lunch with him. Just before we parted, I pressed him for a biographical sketch. He replied with the usual alumni disclaimer that "nothing he did could possibly be of interest to anyone else" since he is, after all, leading only a quiet, uneventful life as a junk dealer. The "junk" in question is apparently used textile machinery, since he works for the Barnes Textile Associates in Boston. Now, I personally find unexpected news regarding an improbable occupation of great interest. I suspect that most of you enjoy this kind of news item at least as much as the usual note of successful accomplishment. After all, we assume that most of our classmates will be successful. What is amazing and more interesting (to me at least) is the tremendous variety of possible occupations and the many different ways in which success can be achieved. I'm all for more of this kind of information. How about you? . . . **Wally Row** has promoted another biographical sketch for us, but since we already seem to have a plethora of information this month, I will hold out until the February issue.—**Frank T. Hulswit,** Secretary, 14 Nadine Road, Saxonville, Mass.

'50

Here we are in 1962. It seems great "moments" are in store for us all. What have you been doing since our last get-together? I haven't heard from you fellows so I assume that you are all hard at work digging your shelter or something! I presume these are the "first priority" reasons why nobody of the Class of '50 has uttered a word or made himself heard with a note. You better write before its too late!!! This is my last sales talk. So let us communicate as often as possible; it's the best possible way to keep the Class of '50 spirit alive. This is all the news that I have which will interest all of you, I trust.

I suggest you get your pen and pencil out and make the following address changes: **Marlo J. Abbate,** 156 Fox Lane, Northport, N.Y.; **Joseph T. Benedict,** Stauffer Chemical Company, 380 Madison Avenue, New York, N.Y.; **Henderson Cole, Jr.,** Old Shop Road, Cross River, N.Y.; **George H. Costomiris,** Brown Street, Middletown, Conn.; **Herbert C. DeStaebler, Jr.,** Project M, Stanford, Calif.; **Herbert L. Hochberg,** 10 Channing Place, Eastchester, N.Y.; **Ralph A. Horne,** 96 Chestnut Street, Boston 8, Mass.; **John S. Lane,** 902 Allwood Road, Clifton, N.J.; **Leonard I. Lann,** 3426 Janvale Road, Baltimore, Md.; **Richard C. Lesser,** RD #1, 337 Harford Road, Brookdale, N.Y.; **William B. McGorum, Jr.,** 3104 Mayfield Road, Silver Lake, Ciyahoga Falls, Ohio. **Mrs. Gordon Raisbeck,** 40 Bloomfield Street, Lexington, Mass.; **Casper Ranger, 3d,** 48 Linden Road, Baire d'Uire, Quebec, Canada; **Donald R. Smith,** Union Carbide Europa, 40 Rue du Rhone, Geneva, Switzerland; **Lee M. Spetner,** 78-01-13th Street, N.W., Washington 12, D.C.; **Gilbert S. Stubbs,** 437 Old Clairton Road, Pittsburgh 36, Pa.; **Donald S. Thayer,** P.O. Box 55, North Syracuse 12, N.Y.

Fred Wheelock is assistant professor of preventive medicine of the School of Medicine of Western Reserve University in Cleveland. Fred and his wife have two children. . . . **Paul Kruger,** prominent nuclear scientist, is with Hazleton-Nuclear Science Corporation as manager of the Nuclear Projects Department. He will be in charge of research and development programs in such areas as radiochemistry, reactor technology, and industrial utilization of radioisotopes. . . . **Ron Scott** was recently appointed dean of engineering at Northeastern University; he is also the director of research for a New England firm. The company has patents pending on a device which is based on Ron's theory. . . . **Ed Friedman** presently is working as project engineer at the Chandler Evans Corporation in West Hartford, Conn.; Ed and his wife, Esida, have one son, Charles, 7½ years old. . . . I sincerely hope that the start of the new year will bring correspondence from each and every one of you so that we can catch up on each other's careers a little since leaving Tech. I certainly would like to start a "this is your life???" series which traces you guys from '50 to '62—F.B.I. style with all the details!—**Gabriel N. Stilian,** American Management Association, 1515 Broadway, New York 36, N.Y.

'52

Jim Davidson reports that the 10th Reunion plans are rolling along and that response to the initial questionaire indicates that attendance may reach 300 people, possibly breaking the record attendance for 10th Reunions (set by '51 last year). Shortly after this appears in print, you should be receiving another mailing on this. Meanwhile, have you sent in your questionaire to Jim? . . . Hither and yon from the mailbag. **Tony Ralston** is an associate professor of mathematics and director of the Computer Center at Stevens Institute of Technology and is living in Englewood, N.J. . . . **David Curry** is vice-president of H. B. Curry Company and is living in Hingham, Mass. . . . **Edwin Kessler** is a senior research scientist in radar meteorology with Travelers Research Center, Inc. in Connecticut and is living in New Britain, Conn. . . . **Edward Selig** is assistant to the director, Industrial Products Division of Adler Electronics, Inc., and is now in Mamaroneck, N.Y. . . . **David A. Johnson** is head of Chemical Development Labs, R&D of Bristol Laboratories in Syracuse, N.Y.

Ben Agusta is studying for his Ph.D. on IBM's Fellowship Program at Syracuse University, while working for IBM as a project engineer. . . . **Louis Deis** is with Avison Corporation as manufacturing superintendent at their Film Plant, responsible for polyprophylene film production and is living in Wilmington, Del. . . . **Ryland L. Bailey** is with Appalachian Power Company as a commercial sales engineer, designing lighting, heating, and wiring systems for commercial customers and encouraging the use of more electricity, in the Bluefield, W.Va., area. . . . **Donald Spooner** is a project engineer with Eastman Kodak in Rochester, N.Y. . . . Incidentally, if this column seems long on short facts, and short on more interesting anecdotes, it's because I'm taking it off the reunion questionaires. Seriously, I would like to get some newsy letters to use for column information; unless you want fiction, please write.

Bob Goode is with Dynatech Corporation in Cambridge as manager of the Engineering Mechanics Department of this consulting firm, and is living in Sudbury. . . . **Sidney Byrum** is expediting and supervising construction as general superintendent and secretary of the Byrum Construction Company in Wheeling, W.Va. . . . **Arnie A. Kramer** is production superintendent with Mechanics Upholstering Company, Inc. in Worcester. . . . And **Peter Melnik** is in Wallingford, Conn., with American Cyanamid as production engineer, troubleshooting. . . . **Clyde N. Baker, Jr.** is in Wheaton, Ill., as vice-president and chief engineer of Soil Testing Services, Inc.; he is in charge of all engineering oper tions. . . . **Andrew G. Ferenz, Jr.** is a partner in Burke and Ferenz, in engineering and construction and is living in Riverton, N.J. . . . **Jim Dorsey** is with Baldwin Lima Hamilton Corporation as chief engineer working on strain gage and thermocouple engineering. . . . **Omar Wing** is an associate professor of electrical engineering at Columbia University, and coauthor of "Principles of Linear Networks," McGraw Hill, 1961; he is living in New York City. (Incidentally, many of you mentioned you had published books, papers, etc. but didn't give titles. I'll be very happy to get any specific in-

formation on these for column use, as I think that they are the type of news most of us are interested in). . . . **Ken Childs** is with Crandall Dry Dock Engineers, Inc. as vice-president. They are a firm of civil engineers specializing in consulting and design of marine railway drydocks throughout the world. Ken says they live in Medfield, Mass., "when we are in the U.S.A." . . . **Rick Quigley** is now with the Mitre Corporation and living in Wayland. . . . **Philip Spiegelman** is in Ann Arbor, Mich., working on his Ph.D. thesis in chemical engineering at the University of Michigan; he also announces the birth of daughter Anne in November. . . . **Michael J. Cambon** is with M. W. Kellogg as a mining engineer doing flowsheet and plant arrangements for ore beneficiating plants, and living in Wayne, N.J. . . . **Carl H. Brubaker, Jr.** writes that he is still at the Department of Chemistry, Michigan State University, East Lansing. . . . **G. Bradley Seager, Jr.** is a teaching fellow in education, while studying for his Ed.D. at Harvard and living in Cambridge.

Mike Goldman is with General Electric as a supervisor in Planning, Methods, and Time Studies in Inertial and Flight Control Systems; he is living in Vestal, N.Y. . . . **Bob Donovan** is with Westinghouse working in their Solid State Lab on design and fabrication of semiconductor devices; he published an article in "Physical Review," April 15, 1960, and is living in Bowie, Md. . . . **Vincent Donnelly, Jr.** is with Blaw-Knox Company, Buflouvak Equipment Division, as a project engineer on chemical, food, and similar processing equipment, especially evaporators. . . . **John F. Maxwell, Jr.** is in Boston, working at M.I.T. in the Industrial Liaison Office. . . . **Erwin Schowengerdt** is an administrative assistant at Lincoln Lab, living in Watertown. He was inquiring about bringing a boat to the reunion. (I think that is really the best way of going myself and am frankly envious.)

And that is about it for now. I'd appreciate any letters, and on any of the reunion mailing returns, take a minute and drop a note.—**Dana M. Ferguson,** Secretary. 242 Great Road, Acton, Mass.

'53

Paul P. Shepherd, our class president, is tooling up for the gala 10th Reunion of our class. All volunteers (and any others whose arms we can twist) who desire to take advantage of the "rare honor and privilege" (dubious? Of course not!) of contributing to this national and historic event, please contact either Paul or myself. Remember there will be ONLY one 10th Reunion of the M.I.T. Class of '53 in the ENTIRE history of mankind. This is an opportunity you cannot afford to miss!

If you cannot guess, I'm short on both news and time. A couple of briefs. . . . **Douglas G. Harvey** was a participant in the American Rocket Society's Space Flight Report to the nation early this October. The paper he delivered was entitled "The First Nuclear Power Generator in Space." It traced the development of the TRANSIT IV-A generator which is currently powering two transmitters aboard the Navy satellite launched last June. . . . **Carol Kolm** and her husband, **Eric,** established themselves about two years ago under the firm name of U.S. Sonics Corporation. After many long months of hard work, their research developed a paper-thin and less than dime-sized ceramic filter which apparently will replace metallic radio-television transformers. The tiny intermediate frequency filter, according to reports, cannot get out of tune, is highly resistant to physical shock and variations in temperature, and will serve for the life of the set. The filter is already being mass-produced, and the first sets equipped with their filters are due on the market immediately. . . . **Maurice Torti** was promoted to the post of director of metallurgical research for the Metals Division of the National Research Corporation (Cambridge) during midsummer. Maurice has been with N.R.C. since 1956 and has specialized in physical metallurgy; also, he has been responsible for the first production scale vacuum arc melting of tantalum in this country and the fabrication of tantalum and alloy ingots. . . . That is all. If you want your name in print, please write or call.—**Martin Wohl,** Secretary, Room 1-131, M.I.T., Cambridge 39, Mass.

'55

In drips and drops, bits and pieces, news of the class eventually manages to seep into Cambridge. A most welcome batch of clippings from **Ella** and **Dick Gardner** contains several interesting items from the Detroit area. . . . **Bob Morgan** and his fiancee, Eleanor Dye, left New York to spend the Labor Day weekend at Bob's home in Grosse Pointe. An October 14 wedding at Eleanor's home in Dayton, Ohio, was planned. . . . In June, **Stefan Habsburg** became a United States citizen, thus discarding his Austrian title of archduke. An automobile designer at the General Motor's Technical Center, he played an important role in the design of General Motor's futuristic Firebird III; he continues work on projects in transportation design. Recently he and his wife, formerly Jerrine Soper of Milton, traveled to Europe to visit his family there. Besides entertaining his four children in his spare time—or maybe in spite of this—Stefan is building a sports car at home in his garage! . . . **Stan Barringer** is working in another area of transportation; he makes his headquarters at the Missouri and Pacific Building in St. Louis. "I am still a traveling car agent for the Burlington Railroad," writes Stan, "and travel everywhere west and sometimes just everywhere." His engagement to Ruth Alice Forder of St. Louis, Mo., was announced last summer. Miss Forder had at that time just completed her studies at the School of Foreign Service at Georgetown University.

The Marine Biological Labs in Woods Hole is the present location of **John Blake.** . . . **Dave Nasatir** and his family are still reaping the benefits of the Bay area and thereabouts—all the way to Mexico City last Christmas! The students in the family are now Mar (Berkeley) and Gail (kindergarten) as Dave has become a full-time breadwinner since June with the University Center for the Study of Higher Education. Your Wilmington correspondent is once again socially useful, part of the time anyway, teaching math at Friends School. But Jack and I barely made it back to civilization from a terrific vacation in the wilderness of Maine up around Katahdin, much less to useful work! You can't beat that part of the world for peace, solitude, and beauty. . . . As always June was degree time. **Frederick C. Hennie, 3d,** received the Sc.D. degree from M.I.T., after receiving his B.S. and M.S. there too. His dissertation was entitled "Iterative Arrays of Logical Circuits." . . . **Martin Shooman** received the degree of doctor of electrical engineering from the Polytechnic Institute of Brooklyn, and **Nicholas Kafes** received from Lehigh the degree of M.S. in chemical engineering. . . . Word has also arrived from the University of Oregon. **Marcia Harrington** is a graduate assistant there in the English Department. . . . Finally, from the secure world behind the ivy comes word that **Walt Rubin,** who received his M.D. from Cornell Med School in New York, has been appointed a teaching fellow in medicine at the Harvard Medical School.

George Raymond has been elected to the board of Raymond Engineering Laboratory, Inc., of Middletown, Conn. . . . **Dick DiBona** at Microwave Associates has been appointed sales manager for the electron tube and device division. . . . **Denny Shapiro** continues to pilot his year-old company, Aerospace Research, Inc. Prior to October 14, Aerospace was located in the building almost directly across from 77 Massachusetts Avenue, where WGBH had its studios. On that date, however, fire gutted the building and sent Denny packing to a new location in Newton. The company suffered comparatively minor losses, except for one item, the Class News for last month, which was mislaid in the chaos. . . . **Keith Hertz** was married on September 24 to the former Frances Kowitt. Keith is presently a candidate for an M.B.A. at Rutgers. Frances graduated from Bryn Mawr and received an M.S. from the University of Minnesota. . . . **Ed Berg,** President of Contronics, has received praise from the Navy for his efforts in supplying electronic gear for the Polaris. Started in 1959 with only three employees, Contronics is headed for its first million dollar sales year in 1961. At least that's what Ed hopes. While more than two-thirds of the company's present contracts focus on national defense, a sizable share of the company's business comes from research and development and production of electronic equipment without government assistance.

The Class of '55 was represented at the 4th International Conference on Medical Electronics in New York last July. **Wesley Clark,** presently at Lincoln Labs, was the man; he spoke on "General Purpose Computers in Medicine and Biology." . . .

Bob Temple and **Barry Stein** were both singled out for praise in the latest annual report from Arthur D. Little. Bob successfully solved a difficult problem concerning hydrogen gas supplies at Motorola's Semiconductor Products Division in Phoenix, Ariz.; Barry participated in the development of a new technique to measure the effect of shock on the structure of crystalline solids over a wide range of temperatures and pressures. . . . Finally **Don Brennan,** also of Lincoln Labs, spoke at the Western Electronic Show and Convention which met last August in San Francisco. He participated with several others in a discussion of arms control. . . . Make just one more New Year's resolution: send in an item about yourself or your classmates, and do it today.—**L. Dennis Shapiro,** 15 Linnean Street, Cambridge, Mass.; **Mrs. J. H. Venarde,** 107 Mullin Road, Wilmington 3, Del.; **David L. Rados,** Guest Correspondent.

'56

First this month, I would like to comment on the letter by **Joseph S. Kaming, Jr.,** which was published in "Feedback" in the November issue. Although your class officers did read his letter prior to publication to insure correctness of detail, this did not signify approval or disapproval. The information for Mr. Kaming's letter came partly from our reunion questionaire and partly from the new Alumni Register.

From my personal point of view, a Technology education prepares men and women for the challenges of problem solving in today's world. A final choice of profession need not be limited by this education, as can be seen by reviewing the Alumni records for M.I.T.'s first century. Indeed, a final professional choice often is not made until years after completing undergraduate training. For those who seek and find a profession which holds their interest, there is the satisfaction of personal fulfillment. I feel that we can hardly judge the careers of others by our own standards, and I find it difficult to criticize a man who leads a full, happy professional life balanced by a happy home and civic life. To achieve this combination, I think one must be willing to invest a few years of his life in less desirable circumstances. I leave you with these thoughts and await any comments you may have.

Next is some news of our classmates. **Jim Allen** is an engineer in the structural division of Stone and Webster Engineering of Boston. . . . In a recent letter **Bob Alter** reveals that his reserve unit has been activated for a year. Bob has been promoted to captain and is a company commander in the Chemical Corps. . . . **Fred Bialek** is a section head with Fairchild Semiconductor Corporation in California. Fred was wed in 1956. . . . **Jim Hamblet** is a foreman in the Boston operating department of J. T. Ryerson and Sons steel warehouse. Jim received an M.B.A. from Babson. Ann and Jim have one daughter. . . . **Bill Hansen** is an operations analyst with Tech Ops in Washington, D.C. . . . **Hank Imus** is a graduate student of the University of Virginia. Hank was married in 1960. . . . **Dave Kelley** has graduated from Boston University Medical School and has spent a year as house officer at the Hartford Hospital. Barbara and Dave have one son. . . . **Bruce Montgomery** is a magnet designer at M.I.T. Bruce was wed in 1954 and has one son. . . . **Ric Schonblom** is a regular officer in the army and is with an artillery battalion at Fort Sill, Okla. . . . **Hank Valcour** is with Bethlehem Steel at the shipyard in Quincy. Margaret and Hank have two sons.

The other night your secretary and his wife attended a celebration party in honor of **Jack Saloma**'s completing work on his Ph.D. at Harvard. The party was given by **Karen Erickson** at the Radcliffe Graduate Center. Delightful tidbits, including a special apple cake, were provided by Jack's mother and his twin sister.

Familiar '56 faces in attendance included Bob and Joan Malster, Mickey and Rhea Reiss, Warren and Renata Briggs, Bill and Ilene Grinker, Bob and Doretta Klein. Also attending were other friends of Jack from Tech, Harvard, London and Washington. Jack is returning immediately to Washington to continue his work with the government. Gleanings of the evening included the fact that **Bill Grinker** is teaching a course on computers at the evening school of Boston University in addition to covering Massachusetts from the IBM Boston sales office. Remember the new address for **Robert L. Malster:** 24 Alcott Street, Acton, Massachusetts.—**Bruce B. Bredehoft,** Secretary, 1094 Center Street, Newton Center 59, Mass.

'57

Bob Green, who has his M.S. in electrical engineering from Columbia University, has joined Auerbach Electronics Corporation in Philadelphia in communication systems engineering. . . . **Terence Porter,** who has his Ph.D. from the University of California, was awarded a National Bureau of Standards postdoctoral research associateship for basic study of "emission spectrum of nitrogen bromide." . . . **John Spencer** has accepted a position with the Boy Scouts of America as district executive for the Hudson-Delaware Council. John and Ruth Spencer have one son, John, Jr., born September 17, 1959. . . . **Ken Konkle** and **Jack Mitchell,** both of whom work for Lincoln Lab, discussed the FX-1 experimental computer at the October meeting of the Boston Chapter of the Professional Group on Electronic Computers. . . . **John Egan,** staff consultant to the Mead Corporation, Chillicothe, Ohio, co-authored a paper presented at the October meeting of the Water Pollution Control Federation. . . . **Ralph Baron,** who is a financial analyst with Union Carbide, is active in Republican Party affairs in his hometown of East Brunswick, N.J. Ralph's most recent appointment was that of co-chairman of policy and organization for Middlesex County.

Dave Lukens has been appointed physics instructor at Dean Junior College near Worcester, Mass. . . . **Vincent Donlan** is a first lieutenant in the USAF at Wright Patterson Field, serving as a nuclear physicist. . . . **Tom Roberts** is teaching science and mathematics at Porter High School, Kezar Falls, Maine. Tom's hobby is restoring antique automobiles. . . . **Richard Decker** is the author of "Application of Digital Control Computers" in the September, 1961 issue of "Westinghouse Engineer." . . . **Charles Cheney,** Director of Plans and Programs at General Dynamics/Telecommunication has been named to the executive committee of this division. . . . Captain **Harvey Arnold** served as a nuclear power plant engineer at the U.S. Army Polar Research and Development Center in Thule, Greenland. . . . **Bob Maak** has joined the technical staff of Esso Research Laboratories, Baton Rouge, La. . . . **John** and Constance **Morris** had their third child (first daughter), Constance, born February 24, 1961. . . . **Joe Roseman** received his M.S. in applied mathematics from Polytechnic Institute of Brooklyn in June, 1961. . . . **Roddy Rogers** is an associate physicist at the Cornell Aeronautical Laboratory, Buffalo, N.Y. Roddy co-authored an article on cloud seeding which appeared in the Spring, 1961, issue of "Research Trends."

The response to our first appeal for class dues has been (at the time of this writing, November 1, 1961) good. However, at least 40 of you jokers have returned the form indicating you couldn't make the 5th Reunion, hope to attend the 10th, and have neglected to enclose $5.00. At least seven of the aforementioned forty didn't even bother to sign their names on the forms returned. The same is true of the guy who sent me the Canadian five dollar bill. Your letter was postmarked Canada, but that doesn't tell me who you are—and that bill converted into only $4.80 U.S. currency. Now I'm not griping, mind you, but the class needs $5.00 dues now from those who are planning to come for the 10th, as well as those who are coming to the 5th, and those who can't come at all. Please sign your name, too. See you in June!—**Alan M. May,** Secretary, 201 East 66th Street, New York 21, N.Y.; **Martin R. Forsberg,** Assistant Secretary, 11 Scottsfield Road, Allston 34, Mass.

'58

Another year. I would say that most of us have just gotten used to writing 1961, creatures of habit that we are. One wonders what the new year holds in store for us as individuals and as part of a very unsettled world. Maybe a good resolution this year would be to make our voices and opinions heard, let the men who make the decisions know how we feel.

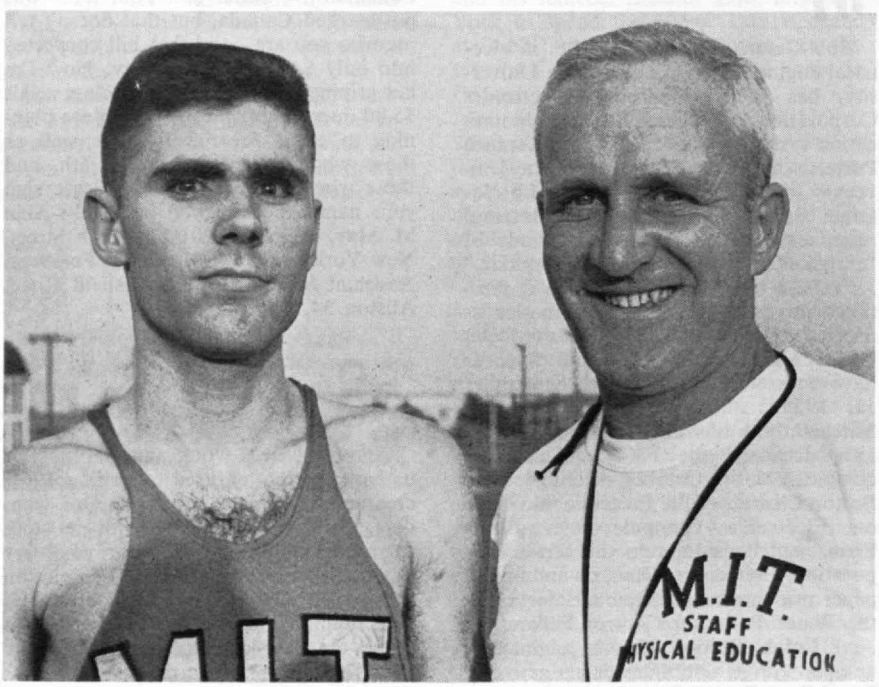
On November 11, in the annual M.I.T. Class Day crew races an alumni boat with four illustrious members of the Class of '58 was present and, if I must say in all modesty, showed the undergraduates that disintegration has not yet set in.

Frank Bielsik came in from Hanscom Field; **Carl Borchert,** who has a place out in Boxford where he lives with his wife, Karen, and young daughter, Katherine (I understand they've tried their hand at chicken raising but have not heard the results as yet), joined with **Nick Latham** to make the trek in from Groveland, and yours truly, who still seems to have an oar in his hand most of the year round. It was great to get out there with the old group again. . . . Carl brought me up to date on a couple of guys. **Roland Newton** is working for Convair in Pomona where he was appointed senior engineer—quite an accomplishment! He got his master's degree in aeronautical engineering in 1959 and married Catherine Kaiser the following August. She is continuing school in Pomona at the same time that she fills the role of mother to young Peter. It seems that on top of all this they still have time to be ardent sailing enthusiasts. Working with Newt is **Ken McIntyre,** who also got his master's degree in aeronautical engineering in 1959 and was promoted to senior engineer at Convair. These boys really must have the combination. However, here the similarity ends as Ken still pursues the joys of a bachelor. . . . **Chuck Haldeman** is at M.I.T. working on his Ph.D. in plasma physics. He got his masters in aeronautical engineering in June, 1959, on the same day that he marmire Louise Stevenson of Wellesley. What a day!

Glenn Bennett is now living in Lexington with an easy commute to Lincoln Lab. Most of his spare time goes into road racing, which he pursues eagerly. I bet some of the rest of us could do with some of this exercise. . . . Have not been hearing from many of you about what you're doing, plans for the future, etc. All I need is the info with which to write this column and we're all set. Try dropping me a postcard sometime soon, before the tax doldrums set in.—**Cornelius Peterson,** Secretary, 65 Sweetwater Avenue, Bedford, Mass.; **Antonia D. Schuman,** Western Associate, Packard Bell Computer Company, 1905 Armacost Avenue, Los Angeles 25, Calif.; **Kenneth Auer,** Midwestern Associate, 1085 Wooster Avenue, Akron 7, Ohio; **William G. Daly, Jr.,** Eastern Associate, 125 White Street, Waverley 79, Mass.

'59

Mail has still been pretty sparse. I hope it will improve in the near future. I did receive a nice letter from **Paul Schmidbauer.** Paul writes: "I am still at the University of California at Berkeley, having taken my M.B.A. last June, and now pushing toward the Ph.D. This year I was fortunate enough to receive a fellowship grant from the Ford Foundation. Another '59 man, **Alex Maksymowicz,** is in the area and is currently working at Stanford's Research Institute, on leave from the Physics Department here. I believe he plans to return to complete work on his doctorate this fall. . . . My old L.S.C. crony, **Conrad Sharpe,** is cutting quite a swath at Electric Boat in Groton, which he joined in September, 1959. At last report he was supervising two sections, one of which he set up himself. His work is involved with planning for the weapons system. . . . Wishing all the best." Thanks for all the info Paul! From the military comes the news that **Jim Wishart** was promoted to first lieutenant, Jim is a member of the 23rd Ordnance Company in Heilbronn, Germany, and his wife, Marita, is with him. . . . **George Peckingham** has completed eight weeks of basic training at Fort Dix, N.J. There is no indication of his location now, however. Hope everyone had a very happy New Year, and I certainly hope to hear from you all, soon.—**Robert A. Muh,** Secretary, 1200 Commonwealth Avenue, Allston, Mass.; John J. McElroy, Assistant Secretary, Apt. 1-K, 190 Mineola Boulevard, Mineola, N. Y.



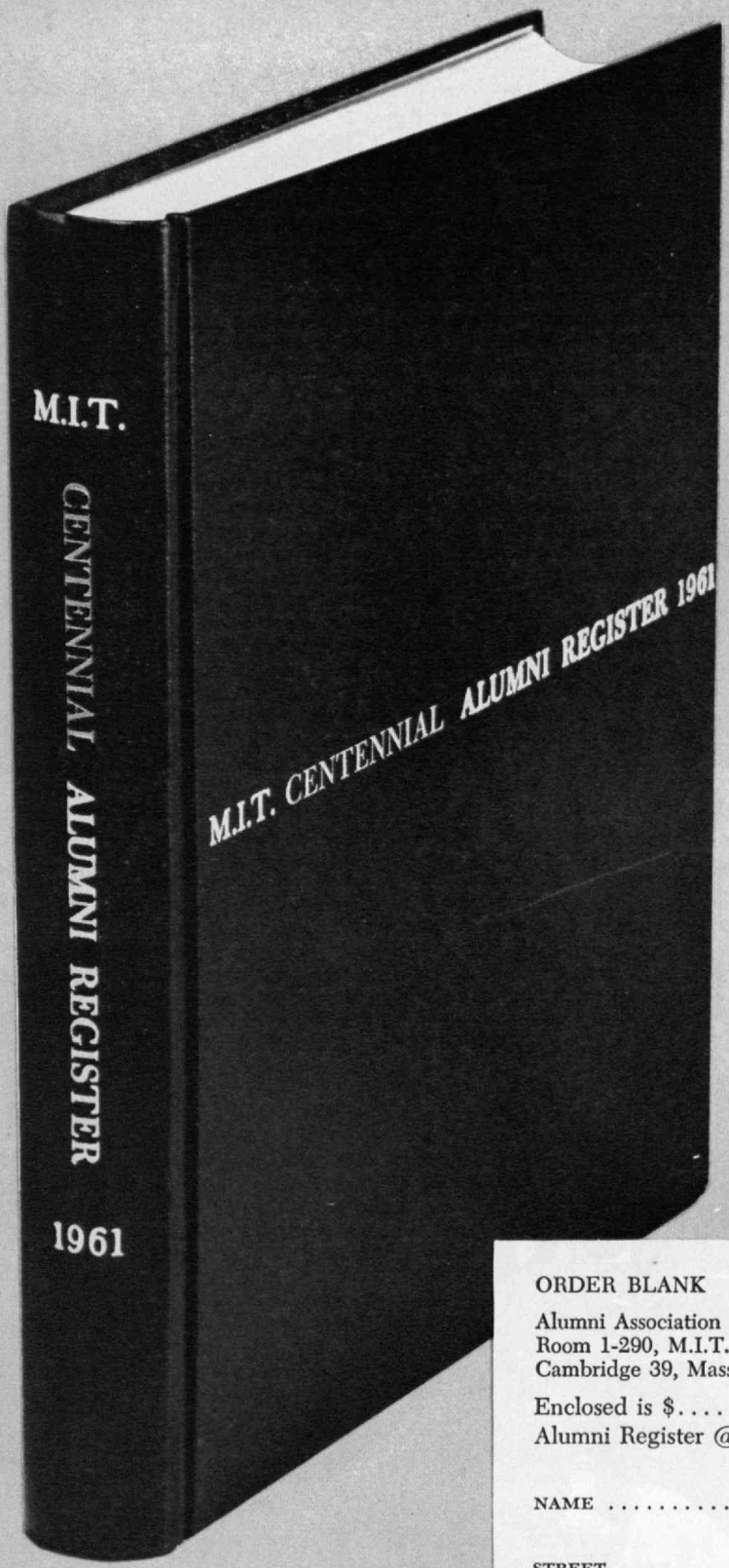
CHARLES SIGWART, '64, at left, was blinded by the explosion of homemade rocket fuel, but looked forward throughout his convalescence to returning to M.I.T., and kept in touch with Track Coach Arthur Farnham. With other runners guiding him, he placed in every cross country meet last fall.

'60

I recently heard from **Abe Feinberg,** who is now working for his S.M. in industrial management at M.I.T. He was married to the former Marjorie Saks on September 4, 1960. He forwarded information on several classmates. . . . **Len Tenner,** after receiving his S.M. in chemical engineering at M.I.T. last June, began working for Amoco Chemical Company in Whiting, Ind. Len was married to Roberta Baker on September 11, 1960. . . . **Frank Tapparo** has been over in Germany since June as a second lieutenant in the Army's 50th Infantry Division. Frank was married to former classmate, **Mary Sattan,** on December 31, 1960. . . . **Jerry Kaiz** is now finishing up his master's thesis in nuclear engineering at M.I.T. Jerry was married last June to Geraldine Jacob. . . . **Bob Gurnitz,** after getting his S.M. in chemical engineering at M.I.T. last June, is the assistant director of M.I.T.'s Practice School of Chemical Engineering at Bayway, N.J. Bob and Ellen Israel were married September 3. . . . **Gerry Litton** is working on his doctorate in nuclear engineering at Berkeley while holding an A.E.C. Fellowship. Gerry and Rochelle Litton announced the birth of their daughter, Cheryl Renee, last April. . . . **Don Steiner** is at M.I.T.'s Practice School at Oak Ridge. He's expecting his S.M. in nuclear engineering this February and plans to return to Tech to work for his Ph.D.

I also received word that **Ed Staples** was married to Nesta Heath in September. . . . **John Beckett** was married to Wendy Hunt on August 26. John is working for Lear, Inc., Romec Division in Elyria, Ohio. . . . **Pete Silverberg** also wrote a note announcing his engagement to Eleanor Grossman, Simmons, '62. They will be married next July. Pete is now working for Air Products and Chemicals in the research department. . . . Some brief notes by way of **Dick McDowell. Bruce Karnopp** is working on a math master's at Brown University. . . . **Bob Lienhard** and **Al Wofford** are both working in the Treasurer's office of Standard Oil of New Jersey.

I received word of the deaths of two of our classmates: **Yvette G. Crousel** on April 1, 1961 and **Gerald R. McCulloh,** July 4, 1961. . . . I hope you have made your contributions to the Alumni Fund (which gives you a free subscription to The Review) and to the Second Century Fund. I can also use some more information as to your whereabouts and activities. Either write me directly or in care of the Alumni Office.—**John B. Stevenson,** Secretary, 106 Ellery Street, Cambridge 38, Mass.



521

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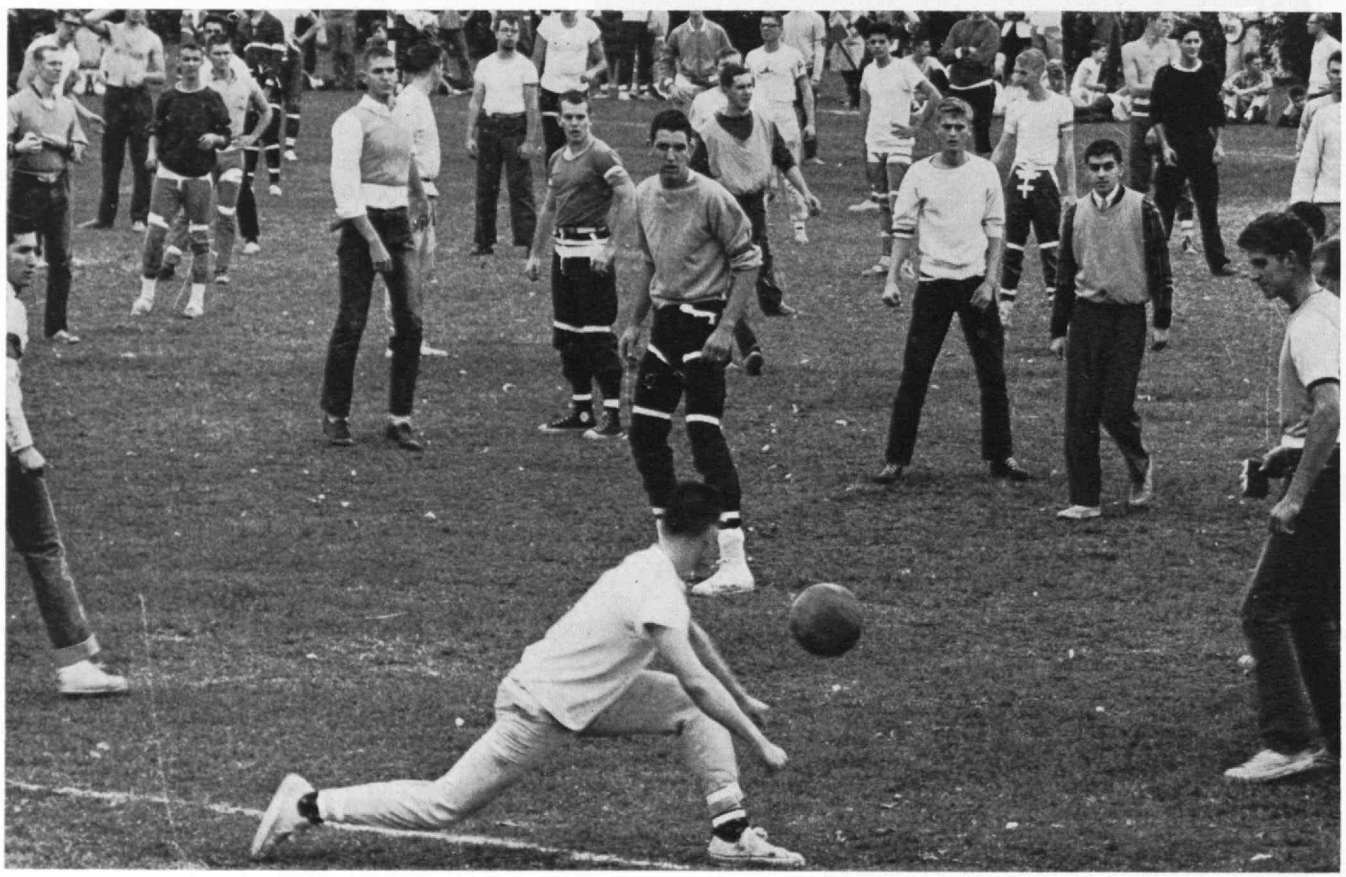
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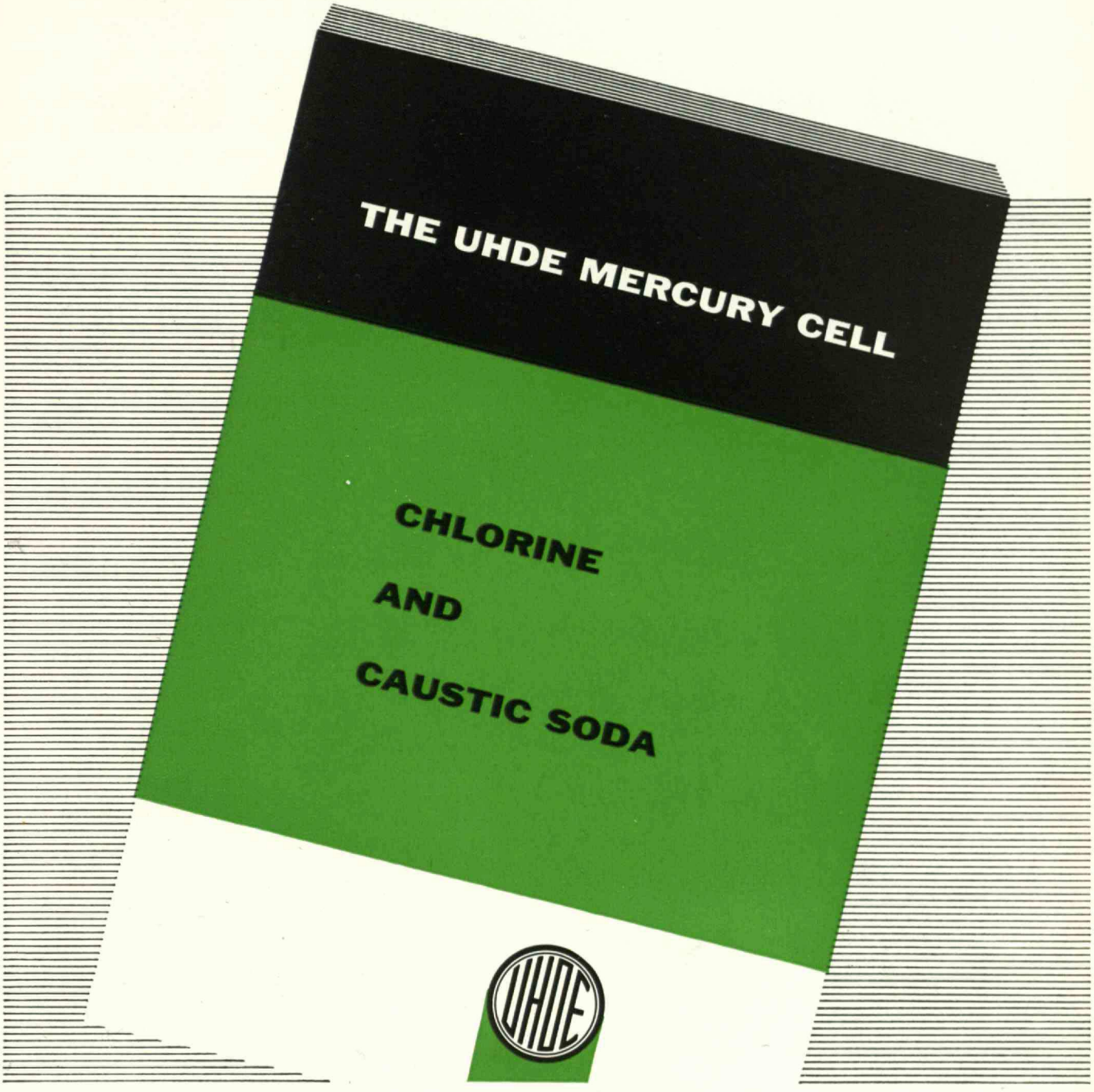
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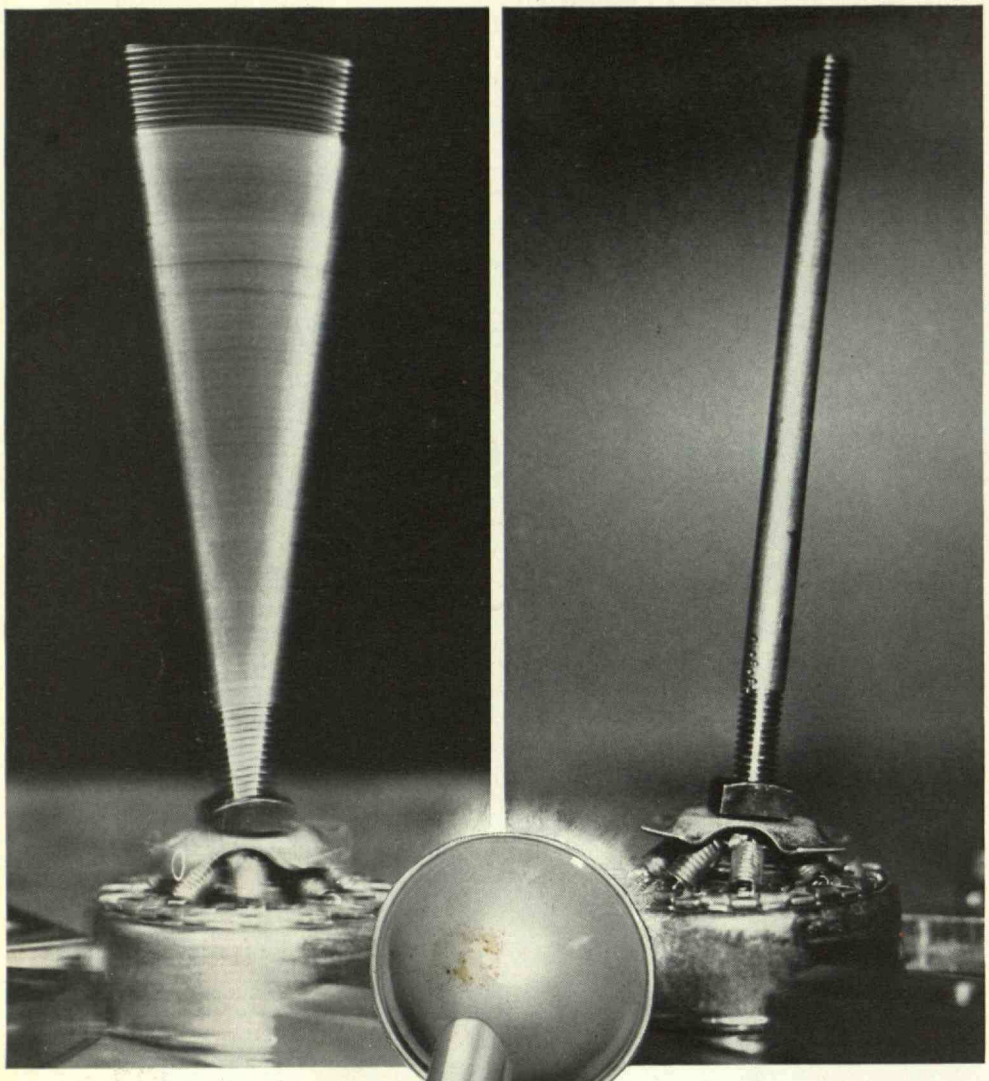
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